March 2023

Course Mapping Guide
Secondary Science

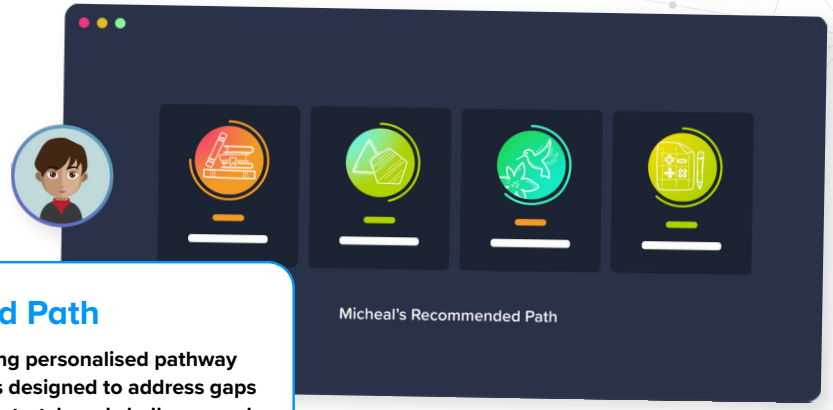
CENTURY

About CENTURY

CENTURY is a learning platform that uses artificial intelligence to personalise learning for every learner. Our team of experienced teachers have created all of our content for English, maths, science, geography and physical education from years 3 to 11, as well as functional skills content for post-16 learners. All courses are aligned to the national curriculum and national standards.

- Learning materials and questions for primary, secondary and post-16 learners
- Tailored to each learner's skills and knowledge
- Powered by the world's leading adaptive learning platform
- Web-based learning for tablets, laptops and desktops

How does CENTURY work?



Diagnostics

Learners begin by completing diagnostics that quickly identify knowledge gaps and misconceptions, and help CENTURY recommend the best learning materials for each individual learner.

Recommended Path

This constantly adapting personalised pathway contains micro-lessons designed to address gaps in knowledge, provide stretch and challenge and promote long-term memory retention.

Leadership Dashboard

Senior and middle leaders get an overview of performance and engagement on a subject, class and learner level.

Achievements

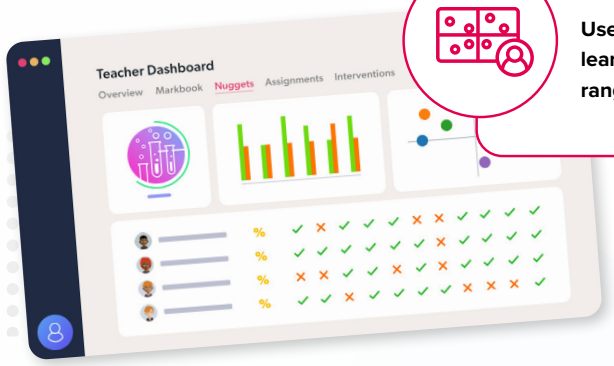
Learners get rewarded with badges and streaks for completing micro-lessons or for using CENTURY over a certain period of time to increase their motivation and engagement.

Automated Marking

Teachers can view data in real time, to help quickly identify which learners require additional support or further stretch.

Teacher Dashboard

Use the markbook to monitor individual learners and whole-class trends with a range of dashboards.



Learner Dashboard & Guardian Portal

Learners can identify their strengths and areas for improvement. Parents and guardians can monitor their learner's progress, completed work, and see work set.

Want to see this in action?

Watch a CENTURY platform walkthrough

Course List

Secondary Science

These courses have been created by our team of experienced secondary science teachers.

Each set of courses are separated by subjects within science, with practical nuggets available throughout.

KS3 courses

Science – KS3 Biology
Diagnostics 14 Strands 11 Nuggets 81

Science – KS3 Chemistry
Diagnostics 22 Strands 15 Nuggets 94

Science – KS3 Physics
Diagnostics 29 Strands 18 Nuggets 163

View KS3 National Curriculum Map

GCSE Higher courses

Science – GCSE (H) Biology
Diagnostics 13 Strands 15 Nuggets 98

View Course Content

Science – GCSE (H) Chemistry
Diagnostics 11 Strands 11 Nuggets 75

View Course Content

Science – GCSE (H) Physics
Diagnostics 11 Strands 12 Nuggets 90

View Course Content

Science – GCSE Practicals
Diagnostics 11 Strands 12 Nuggets 98

View Course Content

GCSE AQA courses

Science Combined GCSE: AQA Trilogy (F) – Biology
Diagnostics 48 Strands 11 Nuggets 437

View Course Content

Science Combined GCSE: AQA Trilogy (F) – Chemistry
Diagnostics 45 Strands 14 Nuggets 373

View Course Content

Science Combined GCSE: AQA Trilogy (F) – Physics
Diagnostics 39 Strands 12 Nuggets 398

View Course Content

Science ELC+ – AQA
Diagnostics 60 Strands 7 Nuggets 319

View Course Content

IGCSE Edexcel courses

Science – IGCSE Biology: Edexcel
Diagnostics 19 Strands 18 Nuggets 103

View Course Content

Science – IGCSE Chemistry: Edexcel
Diagnostics 12 Strands 13 Nuggets 85

View Course Content

Science – IGCSE Physics: Edexcel
Diagnostics 12 Strands 13 Nuggets 91

View Course Content

IGCSE Edexcel Double Award courses

Science Double Award IGCSE: Edexcel – Biology
Diagnostics 27 Strands 6 Nuggets 178

View Course Content

Science Double Award IGCSE: Edexcel – Chemistry
Diagnostics 23 Strands 6 Nuggets 136

View Course Content

Science Double Award IGCSE: Edexcel – Physics
Diagnostics 25 Strands 9 Nuggets 166

View Course Content

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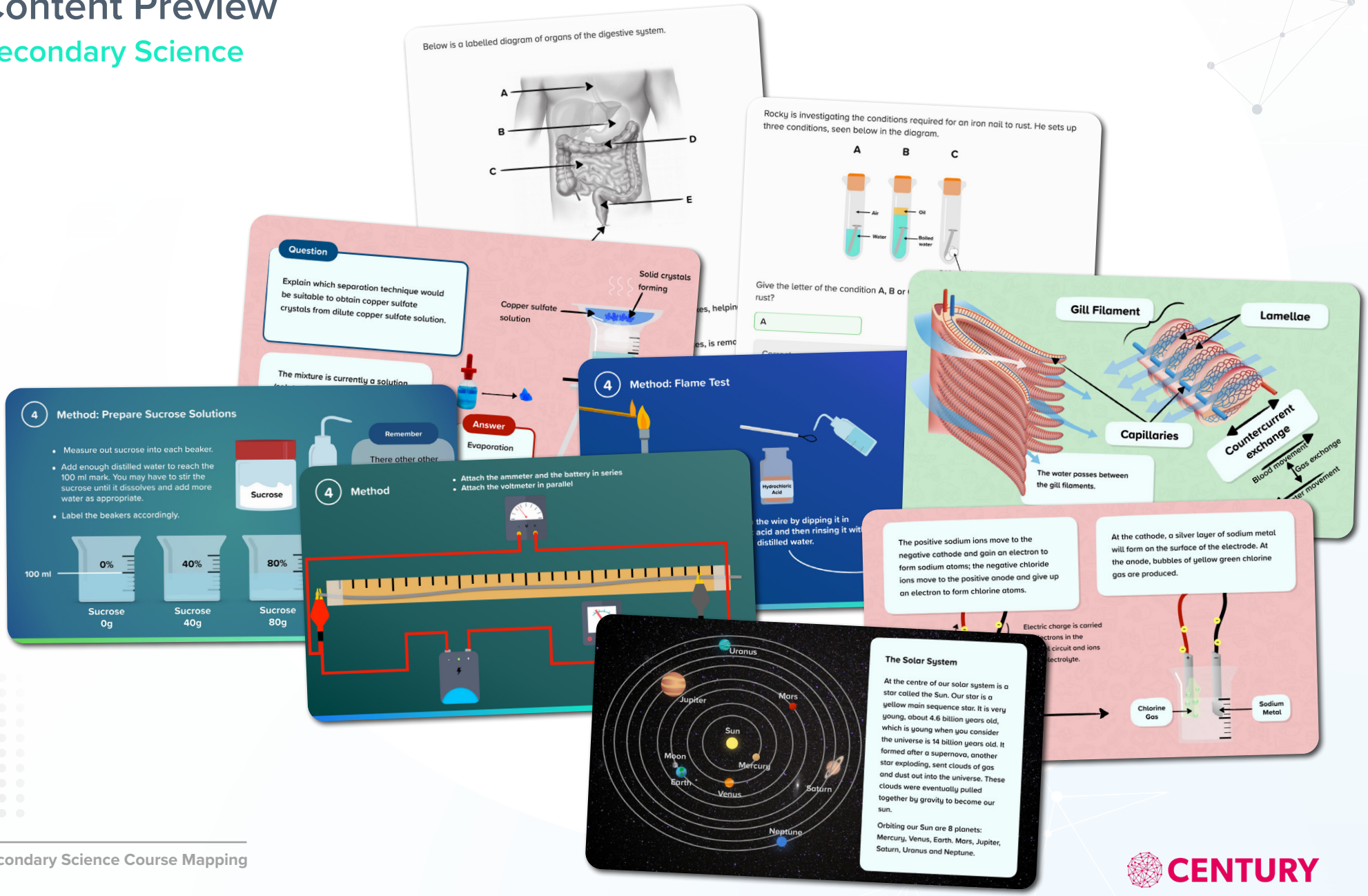
Content Preview

Secondary Science



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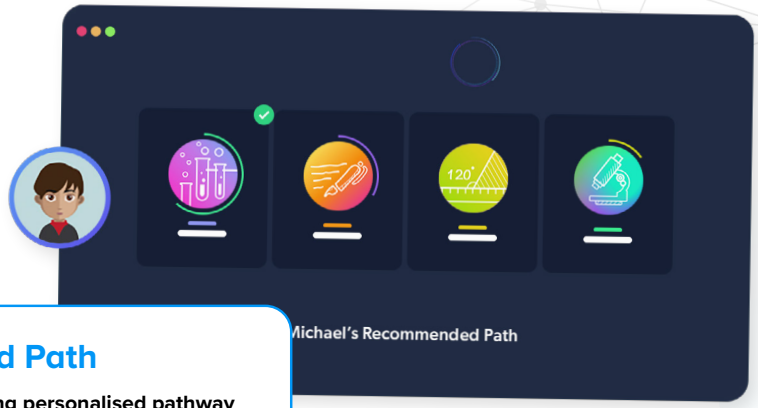
Course Coverage

Secondary Science

Year 7	Year 8	Year 9	Year 10	Year 11
 KS3 Biology KS3 Chemistry KS3 Physics		 Science – GCSE (H) Biology Science – GCSE (H) Chemistry Science – GCSE (H) Physics Science – GCSE (H) Practicals		
		 Science Combined GCSE: AQA Trilogy (F) – Biology Science Combined GCSE: AQA Trilogy (F) – Biology Science Combined GCSE: AQA Trilogy (F) – Biology Science ELC+ – AQA		
		 Science – IGCSE Biology: Edexcel Science – IGCSE Chemistry: Edexcel Science – IGCSE Physics: Edexcel		
		 Science Double Award IGCSE: Edexcel – Biology Science Double Award IGCSE: Edexcel – Chemistry Science Double Award IGCSE: Edexcel – Physics		

CENTURY

How does CENTURY work?



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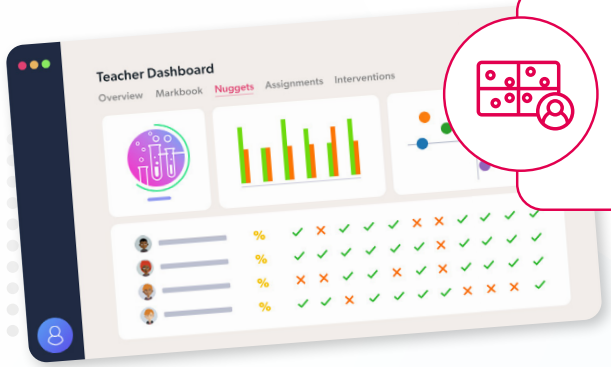

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National Curriculum Map
KS3 Science

This map show how our KS3 Biology, Chemistry and Physics courses are aligned to the KS3 national curriculum. You can edit each of these courses to match your KS3 schemes of work.

Science – KS3 Biology

Diagnostics 14
Strands 11
Nuggets 81

B

Science – KS3 Chemistry

Diagnostics 22
Strands 15
Nuggets 94

C

Science – KS3 Physics

Diagnostics 29
Strands 18
Nuggets 163

P

Code	Name	Course	Strand
Structure and Function of Living Organisms			
Cells and Organisation			
BK1.01	Life Processes	B	Fundamental Life Processes
BK1.02	An Introduction to Cells	B	Fundamental Life Processes
BK1.03	Cell Organelles and their Functions	B	Fundamental Life Processes
BK1.04	Using Microscopes	B	Fundamental Life Processes
BK1.05	Specialised Cells	B	Fundamental Life Processes
BK1.07	Cells to Organisms	B	Fundamental Life Processes
BK1.08	Unicellular and Multicellular Organisms	B	Fundamental Life Processes
BK1.09	Diffusion	B	Fundamental Life Processes
BK1.10	Diffusion in Biology	B	Fundamental Life Processes
BK2.01	Human Organs	B	Humans: Movement
The Skeletal and Muscular Systems			
BK2.03	Biomechanics: Joints	B	Humans: Movement
BK2.04	Biomechanics: Muscles	B	Humans: Movement
BK2.05	Measuring Movement	B	Humans: Movement

Code	Name	Course	Strand
Nutrition and Digestion			
BK3.01	Healthy Diet	B	Humans: Nutrition and Digestion
BK3.02	Energy From Food	B	Humans: Nutrition and Digestion
BK3.03	Consequences of a Poor Diet	B	Humans: Nutrition and Digestion
BK3.04	The Human Digestive System	B	Humans: Nutrition and Digestion
BK3.05	Functions of the Digestive Organs	B	Humans: Nutrition and Digestion
BK3.06	Bacteria in the Human Digestive System	B	Humans: Nutrition and Digestion
BK9.01	Plant Tissues and Organs	B	Plants
BK9.05	Plant Minerals	B	Plants
Gas Exchange Systems			
BK5.01	The Human Gas Exchange System	B	Humans: Gas Exchange
BK5.02	Mechanics of Breathing	B	Humans: Gas Exchange
BK5.03	Adaptations in the Body for Gas Exchange	B	Humans: Gas Exchange
BK5.04	Measuring Breathing	B	Humans: Gas Exchange
BK5.05	Gas Exchange and Health	B	Humans: Gas Exchange
BK5.06	Smoking	B	Humans: Gas Exchange

Code	Name	Course	Strand
BK9.03	Gas Exchange in Plants	B	Plants
Reproduction			
BK6.01	The Female Reproductive Organs	B	Humans: Reproduction
BK6.02	The Male Reproductive Organs	B	Humans: Reproduction
BK6.03	The Menstrual Cycle	B	Humans: Reproduction
BK6.04	Sexual Reproduction in Humans	B	Humans: Reproduction
BK6.05	Pregnancy	B	Humans: Reproduction
BK9.06	Reproduction in Plants: Organs	B	Plants
BK9.07	Reproduction in Plants: Methods of Pollination	B	Plants
BK9.08	Reproduction in Plants: Fertilisation and Germination	B	Plants
BK9.09	Reproduction in Plants: Methods of Seed and Fruit Dispersal	B	Plants
Health			
BK7.01	Pathogens and Spread of Disease	B	Humans: Health
BK7.02	Human Defence Systems	B	Humans: Health
BK7.03	Immunity	B	Humans: Health
BK7.04	Drugs	B	Humans: Health
BK7.05	Medicines	B	Humans: Health
BK7.06	Alcohol	B	Humans: Health
Material Cycles and Energy			
Photosynthesis			
BK9.02	Photosynthesis	B	Plants
BK9.04	Increasing Photosynthesis	B	Plants
BK8.04	Role of the Producer	B	Species Relationships and Interdependencies
BK1.11	Cellular Respiration Aerobic Respiration	B	Fundamental Life Processes
BK1.12	Anaerobic Respiration	B	Fundamental Life Processes
Interactions and Interdependencies			
Relationships in an Ecosystem			
BK8.02	Roles in Ecosystems	B	Species Relationships and Interdependencies
BK8.03	Food Chains and Webs	B	Species Relationships and Interdependencies
BK8.07	Human Impact on Insect Pollination	B	Species Relationships and Interdependencies
BK8.06	Toxic Chemicals in Food Webs	B	Species Relationships and Interdependencies
Genetics and Evolution			
Inheritance, Chromosomes, DNA and Genes			
BK10.01	Nature vs Nurture	B	Genetics and Evolution
BK10.09	The Structure and Function of DNA	B	Genetics and Evolution
BK10.10	The Discovery of DNA	B	Genetics and Evolution
BK10.02	Species and Variation	B	Genetics and Evolution
BK10.03	Investigating Variation in Species	B	Genetics and Evolution
BK10.06	Competition in Environments	B	Genetics and Evolution
BK10.07	Natural Selection	B	Genetics and Evolution
BK10.08	Changes to Habitats and Extinction	B	Genetics and Evolution
BK10.11	Maintaining Biodiversity	B	Genetics and Evolution
Chemistry			
The Particulate Nature of Matter			
CK1.01	States of Matter	C	Matter
CK1.02	Changing States	C	Matter
CK1.03	Changing States: Particle Model	C	Matter
Atoms, Elements and Compounds			
CK2.01	Atoms, Elements, Compounds and Molecules	C	Atoms, Elements and Compounds
CK2.03	Element Symbols and State Symbols	C	Atoms, Elements and Compounds
CK2.04	Naming Compounds	C	Atoms, Elements and Compounds
CK2.05	Formulae for Compounds	C	Atoms, Elements and Compounds
CK7.04	Conservation of Mass	C	Equations and Relative Formula Mass
CK6.01	Chemical Reactions	C	Chemical Reactions
Pure and Impure Substances			
CK5.01	Pure Substances and Mixtures	C	Separating Mixtures

Code	Name	Course	Strand
CK5.03	Solutions	C	Separating Mixtures
CK1.05	Diffusion	C	Matter
CK5.05	Filtration	C	Separating Mixtures
CK5.06	Evaporation	C	Separating Mixtures
CK5.07	Distillation	C	Separating Mixtures
CK5.08	Chromatography	C	Separating Mixtures
CK5.09	Which Separating Technique?	C	Separating Mixtures
CK5.02	Identifying Pure Substances	C	Separating Mixtures
Chemical Reactions			
CK7.01	Chemical Equations	C	Equations and Relative Formula Mass
CK6.04	Oxidation	C	Chemical Reactions
CK6.05	Combustion	C	Chemical Reactions
CK6.06	Thermal Decomposition	C	Chemical Reactions
CK9.01	Reactivity Series	C	Reactivity Series
CK9.03	Displacement Reactions	C	Reactivity Series
CK8.01	Acids and Bases	C	Acids and Bases
CK8.03	Indicators	C	Acids and Bases
CK8.05	Acids and Metals	C	Acids and Bases
CK8.04	Neutralisation	C	Acids and Bases
CK11.05	Catalysts	C	Chemical Energy
Energetics			
CK11.01	Exothermic Reactions	C	Chemical Energy
CK11.02	Endothermic Reactions	C	Chemical Energy
The Periodic Table			
CK1.03	Changing States: Particle Model	C	Matter
CK3.01	The Periodic Table	C	The Periodic Table
CK3.02	Metals vs Non-Metals	C	The Periodic Table
CK3.03	Group 1	C	The Periodic Table
CK3.04	Group 7	C	The Periodic Table
CK3.05	Group 0	C	The Periodic Table
CK3.06	Group 2	C	The Periodic Table
CK3.02	Metals vs Non-Metals	C	The Periodic Table
Materials			
CK9.01	Reactivity Series	C	Reactivity Series
CK9.02	Use of Reactivity Series	C	Reactivity Series
CK9.04	Extraction of Metals	C	Reactivity Series
CK13.07	Polymers	C	Materials
CK13.08	Ceramics and Composites	C	Materials
Earth and Atmosphere			
CK12.01	Structure of the Earth	C	Earth Science
CK12.03	The Rock Cycle	C	Earth Science
CK13.10	Finite and Renewable Resources	C	Materials
CK13.11	Recycling	C	Materials
BK8.10	The Carbon Cycle	B	Species Relationships and Interdependencies
BK8.08	Human Impact on the Atmosphere	B	Species Relationships and Interdependencies
CK12.09	Atmospheric Pollution	C	Earth Science
CK12.10	Human Impact on Climate Change	C	Earth Science
Energy			
Calculation of Fuel Uses and Costs in the Domestic Context			
BK3.02	Energy From Food	B	Humans: Nutrition and Digestion
PK16.05	Energy at Home	P	Energy Resources
PK16.06	The Cost of Energy	P	Energy Resources
PK16.01	Fossil Fuels	P	Energy Resources
PK16.02	Non-Renewable Energy Resources and Power Stations	P	Energy Resources
PK16.03	Renewable Energy Resources	P	Energy Resources

Code	Name	Course	Strand
Energy Changes and Transfers			
PK7.02	Direction of Heat Transfer	P	Heat
PK7.04	Conduction	P	Heat
PK7.05	Conduction Applications	P	Heat
PK7.07	Convection	P	Heat
PK7.08	Radiation	P	Heat
PK7.10	Insulation	P	Heat
PK15.02	Changing Energy Stores	P	Energy
PK15.01	Energy Stores	P	Energy
Changes in Systems			
PK15.04	Changes in Systems Summary: Energy Stores and Pathways	P	Energy
PK15.03	Energy Pathways	P	Energy
Motion and Forces			
Describing Motion			
PK1.01	Speed	P	Motion
PK1.02	Rearranging Speed	P	Motion
PK1.03	Shapes of Distance-Time Graphs	P	Motion
PK1.04	Finding Speed on a Distance-Time Graph	P	Motion
PK1.10	Relative Speed	P	Motion
Forces			
PK2.01	Introduction to Forces	P	Forces
PK2.03	Free Body Force Diagrams	P	Forces
PK2.04	Balanced and Unbalanced Forces	P	Forces
PK2.05	Calculating Balanced and Unbalanced Forces	P	Forces
PK5.01	Moments	P	Work
PK5.02	Classes of Lever	P	Work
PK5.03	Calculating Moments	P	Work
PK2.02	Common Forces	P	Forces
PK2.15	Resistance Forces	P	Forces

Code	Name	Course	Strand
PK2.18	Hooke's Law Practical	P	Forces
PK2.17	Stretching Objects	P	Forces
PK3.01	Introduction to Gravity	P	Gravity
PK3.02	Weight and Mass	P	Gravity
PK9.01	Static Electricity	P	Static Electricity
PK11.01	Magnetic Materials	P	Magnetism
Pressure in Fluids			
PK6.01	Introduction to Pressure	P	Pressure
PK6.02	Pressure in Solids	P	Pressure
PK6.04	Pressure in a Liquid	P	Pressure
PK6.05	Hydraulics	P	Pressure
PK6.08	How does Pressure change with Depth and Height?	P	Pressure
PK2.12	Balanced Forces Newton's Third Law	P	Forces
PK2.06	Forces and Motion Newton's First Law	P	Forces
PK2.07	Newton's Second Law	P	Forces
Waves			
Observed Waves			
PK14.01	Introduction to Waves	P	Waves
PK14.02	Wave Effects	P	Waves
Sound Waves			
PK12.01	Sound and Vibrations	P	Sound
PK12.02	Sources of Sound	P	Sound
PK12.03	Pitch and Frequency	P	Sound
PK12.04	Volume and Amplitude	P	Sound
PK12.05	Speed of Sound in Different Media	P	Sound
PK12.06	Echos	P	Sound
PK12.07	Echo Calculations	P	Sound
PK12.08	How the Ear Works	P	Sound
PK12.09	Human Hearing Range	P	Sound

Code	Name	Course	Strand
Energy and Waves			
PK14.03	Examples of Waves	P	Waves
CK12.05	How Earthquakes Show Us the Structure of the Earth	C	Earth Science
PK13.01	Sound vs Light	P	Light
Light Waves			
PK13.02	Sources of Light	P	Light
PK13.03	What is Light?	P	Light
PK13.04	Transmission, Absorption, Reflection	P	Light
PK13.05	How Do We See?	P	Light
PK13.06	Reflection	P	Light
PK13.07	Images in Mirrors	P	Light
PK13.08	Refraction	P	Light
PK13.09	Advanced Refraction	P	Light
PK13.10	Dispersion	P	Light
PK13.11	Lenses	P	Light
PK13.12	Images from Lenses	P	Light
PK13.13	Colour Mixing: Filters	P	Light
PK13.14	Colour Mixing: Seeing Objects in Different Lights	P	Light
PK13.15	How does the eye work?	P	Light
PK13.16	Introduction to the EM Spectrum	P	Light
Electricity and Electromagnetism			
Current Electricity			
PK8.08	Current	P	Electricity
PK8.09	Current in Series	P	Electricity
PK8.10	Current in Parallel	P	Electricity
PK8.11	Voltage	P	Electricity
PK8.12	Voltage and Batteries	P	Electricity
PK8.13	Voltage in Series	P	Electricity
PK8.14	Voltage in Parallel	P	Electricity
PK8.15	Resistance	P	Electricity
Static Electricity			
PK9.02	Static Electricity: Attraction and Repulsion	P	Static Electricity
PK9.03	Static Electricity and Shocks	P	Static Electricity
PK9.04	The Van Der Graaf Generator	P	Static Electricity
Magnetism			
PK11.02	Permanent and Induced Magnets	P	Magnetism
PK11.03	Making a Compass	P	Magnetism
PK11.04	Attraction and Repulsion of Magnets	P	Magnetism
PK11.05	Magnetic Fields around a Bar Magnet	P	Magnetism
PK11.06	Electromagnets	P	Magnetism
PK11.07	Experiments with Electromagnets	P	Magnetism
PK11.09	Uses of Electromagnets: Bell	P	Magnetism
PK11.10	Uses of Electromagnets: Relay Switch	P	Magnetism
PK11.11	Uses of Electromagnets: Circuit Breaker	P	Magnetism
PK11.12	Uses of Electromagnets: Motor	P	Magnetism
Matter			
Physical Changes			
PK7.11	Changing State	P	Heat
PK4.01	Solids, Liquids, Gases	P	Density
CK1.05	Diffusion	C	Matter
CK6.01	Chemical Reactions	C	Chemical Reactions
Particle Model			
PK4.01	Solids, Liquids, Gases	P	Density
CK1.07	Density	C	Matter
PK4.02	Density: Floating and Sinking	P	Density
PK4.03	Calculating Density	P	Density
PK4.04	Measuring Density	P	Density
CK2.01	Atoms, Elements, Compounds and Molecules	C	Atoms, Elements and Compounds

Code	Name	Course	Strand
PK7.01	Energy in Matter Heat and Temperature	P	Heat
PK15.01	Energy Stores	P	Energy
Space Physics			
PK3.01	Introduction to Gravity	P	Gravity
PK3.02	Weight and Mass	P	Gravity
PK3.03	Measuring g on Earth Practical	P	Gravity
PK3.04	Calculating Weight	P	Gravity
PK3.06	Gravity and Orbits	P	Gravity
PK3.07	How Does Gravity Change in Space?	P	Gravity
PK17.02	Earth, Moon and Sun: Seasons	P	Space
PK17.04	Structure of the Solar System	P	Space
PK17.05	Structure of the Universe	P	Space
Cells to Organisms			
BK1.06	Bacteria and Fungi	B	Fundamental Life Processes
The Human Body			
BK2.02	The Human Skeleton	B	Humans: Movement
BK4.01	The Blood	B	Humans: Circulation
BK4.02	Structure and Function of the Heart	B	Humans: Circulation
BK4.03	Blood Vessels	B	Humans: Circulation
BK4.04	Measuring Heart Rate	B	Humans: Circulation
BK4.05	The Effect of Exercise on Heart Rate	B	Humans: Circulation
BK4.06	Heart Disease	B	Humans: Circulation
BK4.07	The Lymphatic System	B	Humans: Circulation
Natural Cycles			
BK8.01	Types of Ecosystems	B	Species Relationships and Interdependencies
BK8.05	Human Impact on Ecosystems	B	Species Relationships and Interdependencies
BK8.09	Investigating Ecosystems	B	Species Relationships and Interdependencies
BK8.11	The Nitrogen Cycle	B	Species Relationships and Interdependencies
BK8.12	The Water Cycle	B	Species Relationships and Interdependencies

Code	Name	Course	Strand
Plants			
BK9.10	Investigating Plants	B	Plants
BK9.11	Why Are Plants Green?	B	Plants
BK10.04	Adaptations of Animals	B	Genetics and Evolution
BK10.05	Adaptations of Plants	B	Genetics and Evolution
Particle Model			
CK1.04	Changing States: Boiling and Melting Points	C	Matter
CK1.06	Behaviour of Matter	C	Matter
CK11.04	Energy During State Changes	C	Chemical Energy
CK11.03	Reaction Profiles	C	Chemical Energy
PK4.05	Rearranging Density Equation	P	Density
Atomic Structure and Bonding			
CK2.02	Atomic Structure	C	Atoms, Elements and Compounds
CK4.01	Electronic Structure	C	Electronic Structure and Bonding
CK4.02	Forming Ions	C	Electronic Structure and Bonding
CK4.03	Ionic Bonding	C	Electronic Structure and Bonding
CK4.04	Covalent Bonding	C	Electronic Structure and Bonding
CK4.05	Metallic Bonding	C	Electronic Structure and Bonding
CK5.10	Mixtures Potable Water	C	Separating Mixtures
CK5.04	Solubility	C	Separating Mixtures
Chemical Reactions			
CK6.02	Hazards and Risks	C	Chemical Reactions
CK6.03	Testing for Gases	C	Chemical Reactions
CK6.07	Flame Tests	C	Chemical Reactions
CK8.06	Acids and Metal Oxides	C	Acids and Bases
CK8.07	Acids and Metal Hydroxides	C	Acids and Bases
CK8.08	Acids and Metal Carbonates	C	Acids and Bases

Code	Name	Course	Strand
Chemical Calculations			
CK7.02	Balancing Equations	C	Equations and Relative Formula Mass
CK7.03	Relative Formula Mass	C	Equations and Relative Formula Mass
CK7.05	Percentage Yield	C	Equations and Relative Formula Mass
CK7.06	Atom Economy	C	Equations and Relative Formula Mass
CK8.02	Concentration and Strength	C	Acids and Bases
Rates of Reaction			
CK9.05	Electrolysis	C	Reactivity Series
CK10.01	Rates of Reaction	C	Rates of Reaction
CK10.02	Factors Affecting the Rate of Reaction	C	Rates of Reaction
CK10.03	Collision Theory	C	Rates of Reaction
CK10.04	Measuring Rate of Reaction	C	Rates of Reaction
Earth Science			
CK12.02	Types of Rock	C	Earth Science
CK12.04	Tectonic Plates	C	Earth Science
CK12.06	How has the Structure of the Earth Changed	C	Earth Science
Climate Change			
CK12.07	Climate	C	Earth Science
CK12.08	Natural Climate Change	C	Earth Science
PK16.04	Global Warming	C	Energy Resources
CK13.12	Life-Cycle Assessment	C	Materials
Properties of Materials			
CK13.01	Properties of Materials - Chemical Properties	C	Materials
CK13.02	Properties of Materials - Physical Properties	C	Materials
CK13.03	Properties of Materials - Mechanical Properties	C	Materials
CK13.04	Types of materials	C	Materials
CK13.05	Properties of Metals vs Non-Metals	C	Materials
CK13.06	Alloys	C	Materials
CK13.09	Rusting and Corrosion	C	Materials

Code	Name	Course	Strand
Organic Chemistry			
CK14.01	Hydrocarbons	C	Introduction to Organic Compounds
CK14.02	Fractional Distillation of Crude Oil	C	Introduction to Organic Compounds
CK14.03	Cracking of Crude Oil	C	Introduction to Organic Compounds
CK14.04	Fuels	C	Introduction to Organic Compounds
Forces and Motion			
PK1.05	Calculating Acceleration	P	Motion
PK1.06	Rearranging the Acceleration Equation	P	Motion
PK1.07	Shapes of Speed-Time Graphs	P	Motion
PK1.08	Finding Acceleration on a Speed-Time Graph	P	Motion
PK1.09	Finding Distance from a Speed-Time Graph	P	Motion
PK2.08	F=ma Practical	P	Forces
PK2.09	Rearranging F=ma	P	Forces
PK2.10	F=ma with unbalanced forces in 1D	P	Forces
PK2.11	The Two Acceleration Equations	P	Forces
PK2.13	Friction	P	Forces
PK2.14	Friction Experiment WS	P	Forces
PK2.16	Terminal Velocity	P	Forces
PK3.05	Rearranging Weight Equation	P	Gravity
PK3.08	Freefall	P	Gravity
PK3.09	Newton's Cannon	P	Gravity
Work and Moments			
PK5.04	Rearranging the Moment Equation	P	Work
PK5.05	Moments and Equilibrium	P	Work
PK5.06	Advanced Moments: More than 2 objects on a see saw	P	Work
PK5.07	Advanced Moments: Forces in both directions	P	Work
PK5.08	Practical: Finding the Mass of a Ruler	P	Work
PK5.09	Stability and Centre of Mass	P	Work
PK5.10	Practical: Finding the Centre of Mass of a Lamina	P	Work
PK5.11	Work	P	Work

Code	Name	Course	Strand
Pressure			
PK6.03	Rearranging Pressure	P	Pressure
PK6.06	Hydraulic Equations	P	Pressure
PK6.07	Atmospheric Pressure	P	Pressure
PK6.09	How does Pressure change with Temperature?	P	Pressure
PK6.10	How does Pressure change with Volume?	P	Pressure
Energy Transfer			
PK7.03	Cooling Curves	P	Heat
PK7.06	Thermal Expansion	P	Heat
PK7.09	Radiation and Absorption Experiment	P	Heat
PK7.12	Cooling by Evaporation	P	Heat
Electricity			
PK8.01	Introduction to Electricity	P	Electricity
PK8.02	Conductors and Insulators	P	Electricity
PK8.03	Conductors Experiment WS	P	Electricity
PK8.04	Circuit Symbols and Drawing Circuits	P	Electricity
PK8.05	Advanced Circuit Symbols	P	Electricity
PK8.06	Series and Parallel Circuits	P	Electricity
PK8.07	Complete and Incomplete Circuits	P	Electricity
PK8.16	Calculating Resistance	P	Electricity
PK8.17	AC vs DC	P	Electricity
PK8.18	Electrical Safety at Home	P	Electricity
PK8.19	Wiring a Plug	P	Electricity
PK11.08	Magnetic Field around an Electromagnet	P	Magnetism

Code	Name	Course	Strand
Electronics			
PK10.01	Analogue and Digital	P	Electronics
PK10.02	Logic Gates	P	Electronics
PK10.03	Truth Tables	P	Electronics
PK10.04	Combinations of Logic Gates	P	Electronics
PK10.05	Advanced Logic Gates	P	Electronics
Efficiency			
PK15.05	Efficiency	P	Energy
PK15.06	How to Draw a Sankey Diagram	P	Energy
PK15.07	Calculating Efficiency	P	Energy
Space			
PK17.01	Earth, Moon and Sun: Phases of the Moon	P	Space
PK17.03	Earth, Moon and Sun: Eclipses	P	Space
PK17.06	How do we know about the Universe?	P	Space
PK17.07	How has our view of the Universe changed?	P	Space

Course Content

Science – GCSE (H) Biology

Diagnostics 13 **Strands** 15 **Nuggets** 98

This course is aligned to the KS4 national curriculum.
You can edit this course to match your KS4 schemes of work.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostic	13
Cell Biology	12
Cell Metabolism	6
Transport Systems	12
Non-Communicable Disease	5
Communicable Disease & Medicine	10
Photosynthesis & Plant Responses	5
Reproduction, Inheritance & Genetics	7
Evolution & Gene Technology	7
Ecosystems	9
Human Nervous System	5
Hormonal Control in Humans	8
Homeostasis	5
Human Effect on the Environment	5
Biology Practicals	2

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
BH0.01	Diagnostic: Cell Biology
BH0.02	Diagnostic: Cell Metabolism
BH0.03	Diagnostic: Transport Systems
BH0.04	Diagnostic: Non-Communicable Diseases
BH0.05	Diagnostic: Communicable Diseases and Medicine
BH0.06	Diagnostic: Photosynthesis and Plant Responses
BH0.07	Diagnostic: Reproduction, Inheritance and Genetics
BH0.08	Diagnostic: Evolution and Gene Technology
BH0.09	Diagnostic: Ecosystems
BH0.10	Diagnostic: Human Nervous System
BH0.11	Diagnostic: Hormone Control in Humans
BH0.12	Diagnostic: Homeostasis
BH0.13	Diagnostic: Human Effect on the Environment

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Cell Biology	BH1.01	Eukaryotic Cells
	BH1.02	Prokaryotic Cells
	BH1.03	Microscopy
	BH1.04	Orders of Magnitude

Strand	Code	Nugget Name
Cell Biology	BH1.05	Microorganisms: Aseptic Technique
	BH1.06	Analysing Bacterial Cultures
	BH1.07	Specialised Cells
	BH1.08	Cell Division: Mitosis
	BH1.09	Cell Division: Cancer
	BH1.10	Cell Division: Meiosis
	BH1.11	Cell Differentiation & Stem Cells
	BH1.12	Stem Cells in Medicine
Cell Metabolism	BH2.01	Biological Molecules
	BH2.02	Aerobic & Anaerobic Respiration
	BH2.03	Respiration: Effects of Exercise
	BH2.04	Enzyme Action
	BH2.05	Factors Affecting Rate of Enzyme Activities
	BH2.06	Enzymes: Digestion
Transport Systems	BH3.01	Cells, Tissues and Organs
	BH3.02	Transport in Cells: Diffusion
	BH3.03	Transport in Cells: Osmosis
	BH3.04	Transport in Cells: Active Transport
	BH3.05	Exchange Surfaces & SA:V
	BH3.06	Circulatory System: Blood Components
	BH3.07	Circulatory System: Blood Vessels
	BH3.08	Circulatory System: The Heart
	BH3.09	Circulatory System: Breathing & Gaseous Exchange
	BH3.10	Plant Tissues & Organs
	BH3.11	Transport in Plants: Xylem and Phloem
	BH3.12	Transpiration: Stomata and Factors Affecting Rate

Strand	Code	Nugget Name
Non-Communicable Disease	BH4.01	Health & Disease
	BH4.02	Diet, Exercise & Disease
	BH4.03	Smoking and Disease
	BH4.04	Alcohol & Disease
	BH4.05	Cardiovascular Disease
Communicable Disease & Medicine	BH5.01	Pathogens: Spread & Prevention
	BH5.02	Bacterial Diseases
	BH5.03	Viral Diseases
	BH5.04	Fungal Diseases
	BH5.05	Protist Diseases: Malaria
	BH5.06	Plant Disease: Detection & Defence
	BH5.07	Human Defence System
	BH5.08	Vaccines & Drugs
	BH5.09	Developing Drugs
	BH5.10	Monoclonal Antibodies
Photosynthesis & Plant Responses	BH6.01	Photosynthesis
	BH6.02	Limiting Factors of Photosynthesis
	BH6.03	Controlling Photosynthesis
	BH6.04	Plant Tropisms: Auxin
	BH6.05	Using Plant Hormones: Auxin, Gibberellins & Ethene
Reproduction, Inheritance & Genetics	BH7.01	Asexual & Sexual Reproduction
	BH7.02	DNA & The Genome
	BH7.03	DNA Structure & Protein Synthesis
	BH7.04	Gene Expression & Mutation
	BH7.05	Inheritance & Genetic Diagrams
	BH7.06	Inherited Disorders, Codominance & Sex Determination

Strand	Code	Nugget Name
Reproduction, Inheritance & Genetics	BH7.07	History of Inheritance: Mendel & Variation
Evolution & Gene Technology	BH8.01	Theory of Natural Selection
	BH8.02	Evidence for Evolution
	BH8.03	Darwin, Wallace & Speciation
	BH8.04	Classification Systems
	BH8.05	Selective Breeding
	BH8.06	Cloning Methods
	BH8.07	Genetic Engineering & Gene Technologies
Ecosystems	BH9.01	Levels of Organisation
	BH9.02	Competition in Animals and Plants
	BH9.03	Feeding Relationships and Trophic Levels
	BH9.04	Biomass: Pyramids and Transfers
	BH9.05	Distribution & Abundance of Organisms
	BH9.06	The Decay Cycle
	BH9.07	The Carbon Cycle
	BH9.08	The Nitrogen Cycle
	BH9.09	The Water Cycle
Human Nervous System	BH10.01	The Nervous System
	BH10.02	Reflex Arcs
	BH10.03	The Eye: Structure and Function
	BH10.04	The Eye: Common Defects and Treatment
	BH10.05	The Brain

Strand	Code	Nugget Name
Hormonal Control in Human Hormonal Control in Human	BH11.01	The Endocrine System
	BH11.02	Negative Feedback, Thyroxine & Adrenaline
	BH11.03	Puberty & the Menstrual Cycle
	BH11.04	Hormones & the Menstrual Cycle
	BH11.05	Contraception Methods
	BH11.06	Infertility Treatments
	BH11.07	Insulin & Diabetes
	BH11.08	Role of Glucagon
Homeostasis	BH12.01	Thermoregulation
	BH12.02	Removing Waste Products
	BH12.03	The Human Kidney
	BH12.04	Dialysis and Kidney Transplant
	BH12.05	ADH & Water Balance
Human Effect on the Environment	BH13.01	The Impact of Environmental Changes
	BH13.02	Climate Change and Habitat Loss
	BH13.03	Pollution
	BH13.04	Maintaining Biodiversity
	BH13.05	Food Security
Biology Practicals	SP3.01	Osmosis in Potatoes: Method & Data Collection
	SP3.02	Osmosis in Potatoes: Analysis & Conclusion

Course Content

Science – GCSE (H) Chemistry

Diagnostics 11 **Strands** 11 **Nuggets** 75

This course is aligned to the KS4 national curriculum.
You can edit this course to match your KS4 schemes of work.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostic	11
Atomic Structure and the Periodic Table	11
Structure, Bonding and the Properties of Matter	8
Chemical Changes	10
Energy Changes	6
The Rates of Reactions	5
Organic Chemistry	7
Chemical Analysis	7
Quantitative Chemistry	6
Chemical Industries	10
Earth and Atmosphere Science	5

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
CHH0.01	Diagnostic: Atomic Structure and The Periodic Table
CHH0.02	Diagnostic: Structure, Bonding and The Properties of Matter
CHH0.03	Diagnostic: Chemical Changes
CHH0.04	Diagnostic: Energy Changes
CHH0.05	Diagnostic: The Rates of Reactions
CHH0.06	Diagnostic: Organic Chemistry
CHH0.07	Diagnostic: Chemical Analysis
CHH0.08	Diagnostic: Quantitative Chemistry
CHH0.09	Diagnostic: Chemical Industries
CHH0.10	Diagnostic: Earth and Atmosphere
CHH0.11	Chemistry GCSE Higher Baseline

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Atomic Structure and the Periodic Table	CHH1.01	Atomic Structure
	CHH1.02	The Atomic Model
	CHH1.03	Atoms, Elements & Compounds
	CHH1.04	Atomic Number, Mass Number & Isotopes
	CHH1.05	Electronic Structure of Atoms
	CHH1.06	Conservation of Mass
	CHH1.07	Development of the Periodic Table
	CHH1.08	Electronic Structure & The Periodic Table

Strand	Code	Nugget Name
Atomic Structure and the Periodic Table	CHH1.09	Alkali Metals
	CHH1.10	The Halogens
	CHH1.11	Metals, Non-metals & Transition Metals
Structure, Bonding and the Properties of Matter	CHH2.01	States of Matter: Particle Model & Limitations
	CHH2.02	Chemical Bonds: Ionic Bonding
	CHH2.03	Chemical Bonds: Covalent Bonding
	CHH2.04	Chemical Bonds: Metallic Bonding
	CHH2.05	Chemical Bonds: Changes of State
	CHH2.06	Chemical Bonds: Types of Substances
	CHH2.07	Carbon: Structure and Bonding
	CHH2.08	Nanoparticles
Chemical Changes	CHH3.01	Chemical Formulae & Empirical Formulae
	CHH3.02	Balancing Chemical Equations
	CHH3.03	Testing for Gases
	CHH3.04	The pH Scale & Neutralisation
	CHH3.05	Acids: Reactions with Metals and Carbonates
	CHH3.06	Acids: Strength & Concentration
	CHH3.07	Redox Reactions
	CHH3.08	The Reactivity Series & Displacement Reactions
	CHH3.09	Electrolysis: The Process
	CHH3.10	Electrolysis: Predicting the Products
Energy Changes	CHH4.01	Exothermic & Endothermic Reactions
	CHH4.02	Reaction Profiles
	CHH4.03	Bond Energy Calculations
	CHH4.04	Electrochemical Cells
	CHH4.05	Voltage of a Cell

Strand	Code	Nugget Name
Energy	CHH4.06	Fuel Cells: Function, Advantages & Disadvantages
The Rates of Reactions	CHH5.01	Rate of Reaction: Measuring & Analysing
	CHH5.02	Collision Theory
	CHH5.03	Rate of Reaction: The Effect of Catalysts
	CHH5.04	Reversible Reactions & Dynamic Equilibrium
	CHH5.05	Dynamic Equilibrium: The Effect of Reaction Conditions
Organic Chemistry	CHH6.01	Organic Reactions: Alkanes
	CHH6.02	Organic Reactions: Alkenes
	CHH6.03	Organic Reactions: Alcohols
	CHH6.04	Organic Reactions: Carboxylic Acids
	CHH6.05	Addition Polymerisation
	CHH6.06	Condensation Polymerisation
	CHH6.07	Natural Polymers & DNA
Chemical Analysis	CHH7.01	Pure Substances and Mixtures
	CHH7.02	Separation Techniques: Filtration and Crystallisation
	CHH7.03	Separation Techniques: Simple and Fractional Distillation
	CHH7.04	Separation Techniques: Chromatography
	CHH7.05	Tests for Cations
	CHH7.06	Tests for Anions
	CHH7.07	Instrumental Methods of Analysis
Quantitative Chemistry	CHH8.01	Mole: Mass and Molar Mass
	CHH8.02	Avogadro's Constant & Mole
	CHH8.03	Stoichiometry & Limiting Reactants
	CHH8.04	Mole: Concentration & Volume of Solutions
	CHH8.05	Mole: Titration Calculation
	CHH8.06	Mole: Volume of Gases

Strand	Code	Nugget Name
Chemical Industries	CHH9.01	Materials & Recycling
	CHH9.02	Materials: Properties & Uses
	CHH9.03	Corrosion: Process & Prevention
	CHH9.04	Fractional Distillation of Crude Oil
	CHH9.05	Extraction of Metals: Electrolysis
	CHH9.06	Extraction of Metals: Reduction with Carbon
	CHH9.07	Extraction Of Metals: Biological Methods
	CHH9.08	Percentage Yield & Atom Economy
	CHH9.09	The Haber Process
	CHH9.10	Fertilisers: In the Lab & Industry
Earth and Atmosphere Science	CHH10.01	Earth's Atmosphere: Formation and Development
	CHH10.02	Greenhouse Effect and Climate Change
	CHH10.03	Effects of Common Air Pollutants
	CHH10.04	Potable Water & Purification
	CHH10.05	Waste Water Treatment

Course Content

Science – GCSE (H) Physics

Diagnostics 11 **Strands** 12 **Nuggets** 90

This course is aligned to the KS4 national curriculum.
You can edit this course to match your KS4 schemes of work.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	11
Energy	9
Energy Transfer	8
Forces	10
Motion	10
Waves in Matter	7
Light and Electromagnetic Waves	7
Radioactivity	9
The Particle Model of Matter	7
Space Physics	4
Electricity	9
Magnetism and Electromagnetism	10

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
PHH0.01	Diagnostic: Forms and Sources of Energy
PHH0.02	Diagnostic: Energy Transfer
PHH0.03	Diagnostic: Forces
PHH0.04	Diagnostic: Motion
PHH0.05	Diagnostic: Waves in Matter
PHH0.06	Diagnostic: Light and Electromagnetic Waves
PHH0.07	Diagnostic: Electricity
PHH0.08	Diagnostic: Particle model of matter
PHH0.09	Diagnostic: Radioactivity
PHH0.10	Diagnostic: Space Physics
PHH0.11	Diagnostic: Magnetism and Electromagnetism

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Energy	PHH1.01	Energy Stores and Pathways
	PHH1.02	Dissipation of Energy
	PHH1.03	Kinetic Energy
	PHH1.04	Gravitational Potential Energy
	PHH1.05	Elastic Potential Energy
	PHH1.06	Energy Sources: Fossil Fuels and Nuclear Power
	PHH1.07	Energy Sources: Biofuels, Wind, Solar and Geothermal
	PHH1.08	Energy Sources: Hydroelectricity, Waves and Tides
	PHH1.09	Energy Sources: Patterns & Trends

Strand	Code	Nugget Name
Energy Transfer	PHH2.01	Work Done
	PHH2.02	Power
	PHH2.03	Heating & Specific Heat Capacity
	PHH2.04	Conduction
	PHH2.05	Thermal Conduction in Metals: Free Electrons
	PHH2.06	Calculating Efficiency
	PHH2.07	Increasing Efficiency
	PHH2.08	Heating and Insulating Buildings
Forces	PHH3.01	Forces Between Objects: Forces, Vectors and Scalars
	PHH3.02	Weight, Mass and Gravitational Field Strength
	PHH3.03	Resultant Forces & Free Body Diagrams
	PHH3.04	Elasticity and Hooke's Law
	PHH3.05	Pressure: Surfaces
	PHH3.06	Pressure: Fluids
	PHH3.07	Pressure: Atmosphere
	PHH3.08	Moments and Equilibrium
	PHH3.09	Moments: Levers
	PHH3.10	Moments: Gears
Motion	PHH4.01	Speed and Velocity
	PHH4.02	Acceleration and Deceleration
	PHH4.03	Motion Graphs: Distance-Time Graphs
	PHH4.04	Motion Graphs: Velocity-Time Graphs
	PHH4.05	Motion Graphs: Enclosed Areas and Tangents
	PHH4.06	Reaction Time & Stopping Distance
	PHH4.07	Forces Between Objects: Newton's Third Law
	PHH4.08	Forces & Motion: Newton's Second Law and Inertial Mass
	PHH4.09	Forces & Motion: Momentum & Collisions

Strand	Code	Nugget Name
Motion	PHH4.10	Impact Forces in Car Crashes
Waves in Matter	PHH5.01	Features of Waves
	PHH5.02	Transverse and Longitudinal Waves
	PHH5.03	Waves: Measuring Speed
	PHH5.04	Waves: Reflection, Refraction, Transmission & Absorption
	PHH5.05	Human Hearing
	PHH5.06	Waves: Ultrasound
	PHH5.07	Waves: Seismic Waves
Light and Electromagnetic Waves	PHH6.01	Electromagnetic Waves
	PHH6.02	Uses of Electromagnetic Waves
	PHH6.03	Convex (Converging) Lenses
	PHH6.04	Concave (Diverging) Lens
	PHH6.05	Uses of Lenses and Magnification
	PHH6.06	Visible Light
	PHH6.07	Infrared Radiation and Black Body Radiation
Radioactivity	PHH7.01	The Atomic Model
	PHH7.02	Atoms, Isotopes and Ions
	PHH7.03	Radioactive Decay: Types of Radiation
	PHH7.04	Radioactive Decay: Nuclear Equations
	PHH7.05	Background Radiation
	PHH7.06	Half Life
	PHH7.07	Uses and Risks of Nuclear Radiation
	PHH7.08	Nuclear Fission
	PHH7.09	Nuclear Fusion
The Particle Model of Matter	PHH8.01	Density and States of Matter
	PHH8.02	Physical and Chemical Changes
	PHH8.03	Specific Latent Heat and Specific Heat Capacity

Strand	Code	Nugget Name
The Particle Model of Matter	PHH8.04	Work Done on a Gas
	PHH8.05	Gas Pressure and Temperature
	PHH8.06	Gas Pressure and Volume
	PHH8.07	Pressure in gases and liquids
Space Physics	PHH9.01	Orbits
	PHH9.02	Red-Shift & the Expanding Universe
	PHH9.03	The Life Cycle of Stars
	PHH9.04	The Solar System
Electricity	PHH10.01	Static Electricity & Electric Fields
	PHH10.02	Introducing Resistance, Current and Potential Difference
	PHH10.03	Calculating Current, Potential Difference and Resistance
	PHH10.04	Circuit Symbols
	PHH10.05	Power and Energy
	PHH10.06	Parallel and Series Circuits
	PHH10.07	The National Grid
	PHH10.08	Domestic Electricity
	PHH10.09	Resistance Across Different Components
Magnetism and Electromagnetism	PHH11.01	Magnetism: Permanent and Induced Magnets
	PHH11.02	Magnetic Fields
	PHH11.03	Magnetic Fields of Electric Currents
	PHH11.04	Uses of Electromagnets
	PHH11.05	The Motor Effect and Fleming's Left Hand Rule
	PHH11.06	The Motor Effect: Forces and Magnetic Flux Density
	PHH11.07	Induced Potential: Alternators and Dynamos
	PHH11.08	Transformers: How they work
	PHH11.09	Transformers: Equations and Efficiency
	PHH11.10	Microphones and Speakers

Course Content

Science – GCSE Practicals

Course Science – GCSE Practicals

Diagnostics 4 **Strands** 6 **Nuggets** 98

This course is aligned to the KS3 national curriculum.
You can edit this course to match your KS3 schemes of work.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	4
Working Scientifically	21
Chemistry Practicals	17
Biology Practicals	16
Physics Practicals	21
Maths for Scientists	23

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
SP0.01	Diagnostic: Designing Experiments
SP0.02	Diagnostic: Handling Data
SP0.03	Diagnostic: Interpreting Data
SP0.04	Diagnostic: Conclusions and Evaluations

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Working Scientifically	SP1.01	Science & Scientific Applications
	SP1.02	Developing Scientific Theories
	SP1.03	Scientific Questions, Hypothesis & Prediction
	SP1.04	Designing Investigations
	SP1.05	Hazards and Risks
	SP1.06	Data Calculation
	SP1.07	Presenting Data: Tables
	SP1.08	Presenting Data: Bar Charts
	SP1.09	Presenting Data: Pie Charts
	SP1.10	Presenting Data: Histograms
	SP1.11	Presenting Data: Graphs
	SP1.12	Interpreting Data: Gradients
	SP1.13	Interpreting Data: Gradients of Curves
	SP1.14	Interpreting Data: Area under the Graph
	SP1.15	Interpreting Data: Area under the Curve
	SP1.16	Interpreting Data: Shapes of Graphs
	SP1.17	Drawing Conclusions
	SP1.18	Errors and Uncertainties
	SP1.19	Evaluating Experiments
	SP1.20	Units
	SP1.21	Using Formulas
Chemistry Practicals	SP2.01	Investigating pH
	SP2.02	Electrolysis Practical
	SP2.03	Rates of Reaction: Surface Area (HCl and Marble)

Strand	Code	Nugget Name
Chemistry Practicals	SP2.04	Rates of Reaction: Temperature (HCl and Mg)
	SP2.05	Rates of Reaction: Concentration (Cross Method)
	SP2.06	Making Salts
	SP2.07	Distillation Practical
	SP2.08	Chromatography Practical
	SP2.09	Identifying Cations: Flame Tests Practical
	SP2.10	Identifying Cations: Precipitate Tests Practical
	SP2.11	Identifying ions: Testing for Non-Metals Practical
	SP2.12	Carrying out Titration Reactions
	SP2.13	Titration Calculations from Experiments
	SP2.14	Temperature Change in Combustion
	SP2.15	Temperature Change in Exothermic Reactions
	SP2.16	Group 7 trends in Reactivity-Displacement
	SP2.17	Analysis and Purification of Water Samples
Biology Practicals	SP3.01	Osmosis in Potatoes: Method & Data Collection
	SP3.02	Osmosis in Potatoes: Analysis & Conclusion
	SP3.03	Testing Foods for Biological Molecules
	SP3.04	Using Microscopes
	SP3.05	Ecological Sampling: Quadrats
	SP3.06	Ecological Sampling: Transects
	SP3.07	Light Intensity & Photosynthesis
	SP3.08	Investigating pH and Enzyme Activity
	SP3.09	Investigating Antimicrobial Agents
	SP3.10	Physiology: Respiration
	SP3.11	Plant Responses to Light
	SP3.12	Temperature and Decay
Biology Practicals	SP3.13	Anaerobic Respiration
	SP3.14	Reaction Time
	SP3.15	Investigating Temperature and Enzyme Activity
	SP3.16	Investigating Respiration Using a Respirometer
Physics Practicals	SP4.01	Specific Heat Capacity of Solids Practical
	SP4.02	Specific Heat Capacity of Liquids Practical
	SP4.03	Changing State: Experiment investigating Temperature
	SP4.04	Finding the Density of Solids
	SP4.05	Finding the Density of Liquids
	SP4.06	Hooke's Law Experiment
	SP4.07	Acceleration of a Trolley using Ticker Tape
	SP4.08	F=ma Experiment (Pulleys)
	SP4.09	F=ma Extension Ideas
	SP4.10	Investigating the Brightness of Bulbs
	SP4.11	Investigating Resistors in Series and Parallel
	SP4.12	Investigating Resistance & Length
	SP4.13	Investigating the I-V Characteristics of a Resistor
	SP4.14	Investigating the I-V Characteristics of a Filament Bulb
	SP4.15	Investigating the I-V Characteristics of a Diode
	SP4.16	Finding the Speed of a Wave with a Ripple Tank
	SP4.17	Finding the Speed of a Wave on a String
	SP4.18	Reflection and Refraction of Light
	SP4.19	Experiment to Find the Refractive index
	SP4.20	Radiation and Absorption Experiment
	SP4.21	Thermal Insulation
Maths for Scientists	MF50.11	Interpreting Pie Charts

Strand	Code	Nugget Name
Maths for Scientists	MF50.13	Drawing Scatter Graphs
	MF50.10	Creating Pie Charts (Calculator)
	MF50.04	Bar Charts
	MF31.04	Area of Right Angled Triangles
	MF31.03	Area of Squares, Rectangles and Parallelograms
	MF49.07	Range 1: Positive Integers
	MF49.03	Mean 1: Positive Integers
	MF49.02	Median
	MF49.01	Mode
	MF7.01	Understanding Percentages
	MF36.01	Reading Scales
	MF36.04	Converting Metric Length (One Step)
	MF21.02	Substituting into a Formula
	MF21.05	Rearranging Formulae: One Step
	MF23.09	Finding the Gradient of a Line Segment: Using the Formula
	MF23.08	Finding the Gradient of a Line Segment: Using the Graph
	MF48.01	Hypotheses, Primary Data and Secondary Data
	MF48.02	Discrete and Continuous Data
	MF17.13	Substitution into Expressions 1: One Term
	MF19.03	Solving Equations: One Step (÷)
	MF19.02	Solving Equations: One Step (×)
	MF32.07	Area of a Circle: From Radius

Course Content

Science Combined GCSE: AQA Trilogy (F) – Biology

Diagnostics 48 **Strands** 11 **Nuggets** 437

This course is mapped to the biology subject content of AQA GCSE Combined Science: Trilogy Foundation Tier.

AQA: 8464
QAN: 601/8758/X

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	48
Topic Reviews	14
Paper Reviews	2
Topic 1: Cell Biology	43
Topic 2: Organisation	84
Topic 3: Infection & Response	42
Topic 4: Bioenergetics	46
Topic 5: Homeostasis & Response	37
Topic 6: Inheritance, Variation & Evolution	62
Topic 7: Ecology	67
Maths Skills for Biologists	40

Diagnostics

A diagnostic is a baseline assessment.

Code	Strand
BI0.01	Diagnostic: Cells & Cell Structure
BI0.03	Diagnostic: Body Cell Division & Stem Cells
BI0.06	Diagnostic: Exchanging Substances
BI0.08	Diagnostic: The Digestive System
BI0.09	Diagnostic: The Chemistry of Food
BI0.10	Diagnostic: Enzymes & Digestion
BI0.12	Diagnostic: Breathing & Gas Exchange
BI0.13	Diagnostic: Circulatory System
BI0.15	Diagnostic: Health & Non-Communicable Disease
BI0.16	Diagnostic: Cardiovascular Disease
BI0.17	Diagnostic: Treating Cardiovascular Disease
BI0.18	Diagnostic: Plant Anatomy
BI0.19	Diagnostic: Transpiration & Translocation
BI0.20	Diagnostic: The Spread of Communicable Disease
BI0.21	Diagnostic: Infectious Diseases
BI0.22	Diagnostic: Human Immunity & Defence
BI0.23	Diagnostic: Vaccinations
BI0.24	Diagnostic: Medical Drugs
BI0.25	Diagnostic: Developing Drugs
BI0.29	Diagnostic: Introduction to Photosynthesis
BI0.30	Diagnostic: Rate of Photosynthesis
BI0.34	Diagnostic: Respiration

Diagnostics continued

BI0.36	Diagnostic: Exercise, Cardiac Output & Metabolism
BI0.38	Diagnostic: Homeostasis
BI0.42	Diagnostic: The Nervous System
BI0.47	Diagnostic: The Endocrine System
BI0.49	Diagnostic: Blood Glucose Levels
BI0.55	Diagnostic: Puberty & the Menstrual Cycle
BI0.57	Diagnostic: Contraception
BI0.62	Diagnostic: Reproduction
BI0.64	Diagnostic: Introduction to Genetics
BI0.69	Diagnostic: Genetic Diagrams
BI0.71	Diagnostic: Genetics in Practice
BI0.73	Diagnostic: Variation
BI0.75	Diagnostic: Evolution & Natural Selection

BI0.77	Diagnostic: Genetic Engineering
BI0.82	Diagnostic: Evidence for Evolution
BI0.84	Diagnostic: Classification
BI0.85	Diagnostic: Introduction to Ecosystems
BI0.86	Diagnostic: Competition & Adaptation
BI0.87	Diagnostic: Food Chains & Food Webs
BI0.88	Diagnostic: Investigating Ecosystems
BI0.90	Diagnostic: Cycles within Ecosystems
BI0.92	Diagnostic: Human Impacts on Ecosystems
BI0.93	Diagnostic: Pollutants
BI0.94	Diagnostic: Land Use
CH0.089	Diagnostic: Climate Change
BI0.95	Diagnostic: Maintaining Biodiversity

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

AQA		CENTURY			
Topic	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Cell Biology	4.1.2.1	Diagnostic: Body Cell Division & Stem Cells	BI1.18	Chromosomes	State where chromosomes are found and their arrangement. Define DNA, chromosome and gene.
	4.1.2.2		BI1.19	The Cell Cycle	Describe the stages of the cell cycle.
	4.1.2.2		BI1.20	Cell Division: Mitosis	Describe the process of cell division by mitosis.

AQA		CENTURY			
Topic	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Cell Biology	4.1.2.3	Diagnostic: Body Cell Division & Stem Cells	BI1.28	Plant Stem Cells	Describe where plant stem cells are found and their differentiation.
	4.1.2.3		BI1.29	Using Plant Stem Cells	Describe how plant stem cells can be used by humans to clone plants.
	4.1.2.3		BI1.30	Animal Stem Cells	Describe where animal stem cells are found and their differentiation.
	4.1.2.3		BI1.31	Using Animal Stem Cells	Describe stem cell treatments.
	4.1.2.3		BI1.32	Therapeutic Cloning	Describe the process of therapeutic cloning and give advantages and disadvantages of it.
	4.1.2.3		BI1.33	The Ethics of Using Embryonic Stem Cells	Describe the ethical arguments for and against the use of embryonic stem cells.
	4.1.1.1	Diagnostic: Cells & Cell Structure	BI1.01	Introduction to Prokaryotic & Eukaryotic Cells	An introduction to the differences between prokaryotic and eukaryotic cells and their sizes.
	4.1.1.2		BI1.02	Animal Cells	Identify the sub-cellular structures of animal cells and give their functions.
	4.1.1.2		BI1.03	Plant Cells	Identify the sub-cellular structures of plant cells and give their functions.
	4.1.1.2		BI1.04	Comparing Animal & Plant Cells	Compare the structure of animal and plant cells and give their functions.
	4.1.1.1		BI1.05	Bacterial Cells	Identify the sub-cellular structures of bacterial cells and give their functions.
	4.1.1.1		BI1.07	Comparing Prokaryotic & Eukaryotic Cells	Compare the structure of prokaryotic and eukaryotic cells.
	Supplementary		BI1.08	Algae	Describe the structures of algae, where they are found and their importance in ecosystems.
	Supplementary (4.6.4)		BI1.09	Archaea	Describe the structures of archaea, where they are found and their importance in ecosystems and industry.
	4.1.1.5		BI1.10	Microscopes	Describe the developments in microscopy techniques over time and explain how electron microscopy has increased understanding of cells.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Cell Biology	4.1.1.5	Diagnostic: Cells & Cell Structure	BI1.11	Calculating Magnification I	Calculate magnification without unit conversions.
	4.1.1.5		BI1.12	Calculating Magnification II	Calculate magnification with unit conversions.
	4.1.1.5		BI1.13	Rearranging the Magnification Equation	Rearrange the magnification equation.
	RP1		BI1.14	Required Practical 1: Using a Light Microscope	Using a light microscope to observe, draw and label cells.
	4.1.1.4/4.1.2.3		BI1.15	Differentiation	Describe cell differentiation in animals and plants and explain its importance.
	4.1.1.3		BI1.60	Describing the Structure of Specialised Animal Cells	Give examples of specialised cells in animals and describe their features.
	4.1.1.3		BI1.16	Explaining the Structure of Specialised Animal Cells	Explain how specialised cells in animals are adapted for their functions.
	4.1.1.3		BI1.61	Describing the Structure of Specialised Plant Cells	Give examples of specialised cells in plants and describe their features.
	4.1.1.3		BI1.17	Explaining the Structure of Specialised Plant Cells	Explain how specialised cells in plants are adapted for their functions.
	4.1.3.1	Diagnostic: Exchanging Substances	BI1.34	Exchanging Substances: Diffusion	Define and describe diffusion.
	4.1.3.1		BI1.35	Factors Affecting the Rate of Diffusion	List the factors that affect the rate of diffusion and apply that knowledge.
	4.1.3.1		BI1.36	Examples of Diffusion in Biology	Give examples of diffusion in biology.
	4.1.3.2		BI1.37	Exchanging Substances: Osmosis	Define and describe osmosis.
	4.1.3.2		BI1.38	Required Practical 2: Osmosis - Method & Data Collection	Investigate the effects of a range of concentration of solutions on the mass of potato.
	4.1.3.2		BI1.39	Required Practical 2: Osmosis - Analysis & Conclusion	Investigate the effects of a range of concentration of solutions on the mass of potato.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 1: Cell Biology	4.1.3.3	Diagnostic: Exchanging Substances	BI1.42	Exchanging Substances: Active Transport	Define and describe active transport.
	4.1.3.3		BI1.43	Examples of Active Transport	Give examples of active transport.
	4.1.3.1/2/3		BI1.44	Comparing Diffusion, Osmosis & Active Transport	Compare diffusion, osmosis and active transport.
	4.1.3.1		BI1.45	Surface Area to Volume Ratio	Calculate and compare surface area to volume ratios.
	4.1.3.1		BI1.46	The Need for Exchange Surfaces	Use surface area to volume ratio to explain the need for exchange surfaces in multicellular organisms.
	4.1.3.1		BI1.47	Exchange Surfaces: Alveoli	Describe the structure of alveoli and explain how they are adapted for exchanging materials.
	4.1.3.1		BI1.48	Exchange Surfaces: Villi	Describe the structure of villi and explain how they are adapted for exchanging materials.
	4.1.3.1		BI1.49	Exchange Surfaces: Leaves	Describe the structure of leaves and explain how they are adapted for exchanging materials.
	4.1.3.1		BI1.50	Exchange Surfaces: Roots	Describe the structure of roots and explain how they are adapted for exchanging materials.
	4.1.3.1		BI1.51	Exchange Surfaces: Gills	Describe the structure of gills and explain how they are adapted for exchanging materials.
Topic Reviews	Topic Review	-	BI1.52	Topic 1 Review: Cell Biology - Set A	Biology Topic 1 Review for Combined Science AQA Trilogy.
	Topic Review	-	BI1.53	Topic 1 Review: Cell Biology - Set B	Biology Topic 1 Review for Combined Science AQA Trilogy.
Topic 2: Organisation	4.2.2.2	Diagnostic: Breathing & Gas Exchange	BI2.34	The Human Gas Exchange System	Describe the structure and function of the human gas exchange system.
	4.2.2.2		BI2.35	Mechanics of Breathing	Explain the mechanical process of breathing and model breathing using a bell jar.
	4.2.2.2		BI2.36	How Lungs are Adapted for Gas Exchange	Identify main features of the lungs and explain how they facilitate air gas exchange in humans.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 2: Organisation	4.2.2.2	Diagnostic: Breathing & Gas Exchange	BI2.37	Calculating Breathing Rate I	Identify the structures of the lung and complete simple calculations of breathing rates.
	4.2.2.2		BI2.38	Calculating Breathing Rate II	Identify the structures of the lung and calculate breathing rates using data from tables and graphs.
	4.2.2.4	Diagnostic: Cardiovascular Disease	BI2.63	Cardiovascular Disease	Describe cardiovascular disease and give examples (such as CHD).
	4.2.2.4		BI2.64	Heart Failure	Define heart failure and describe what happens when the heart fails.
	4.2.2.4		BI2.66	Heart Attacks	Explain what happens during a heart attack using aerobic respiration. Give possible causes of heart attacks and how to reduce the risks.
	4.2.2.2		BI2.67	Artificial Pacemakers	Describe artificial pacemakers and explain how they function.
	4.2.1	Diagnostic: Circulatory System	BI2.39	The Need for Transport Systems	Use volume and diffusion distance to explain the need for transport systems in multicellular organisms.
	4.2.2.2		BI2.40	The Circulatory System	Describe the double circulatory system and the structure and function of the blood.
	4.2.2.2		BI2.41	Structure of the Heart	Identify the blood vessels and chambers of the heart.
	4.2.2.2		BI2.42	Function of the Heart	Describe blood flow in the heart and the function of each heart structure.
	4.2.2.2		BI2.43	Explaining the Structure of the Heart	Explain the structures and adaptations of the heart.
	4.2.2.2		BI2.44	Measuring Heart Rate	Describe what causes a pulse and show how it can be used the measure pulse/heart rate.
	4.2.2.2		BI2.45	How the Heart Beats (Natural Pacemaker)	Describe what a natural pacemaker is and where it can be found.
	4.2.2.2		BI2.46	The Structure and Function of Blood Vessels	Describe the structure of the different blood vessels and their functions.
	4.2.2.2		BI2.47	Explaining the Structure of Blood Vessels	Explain how blood vessels are adapted for their function.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
	4.2.2.3	Diagnostic: Circulatory System	BI2.49	Blood Components & their Functions	Identify the components of blood and list their functions.
	4.2.2.3		BI2.50	The Structure of Blood Components	Describe the structure of components of blood.
	4.2.2.3		BI2.51	Explaining the Structure of Blood Components	Explain how components of blood are adapted for their functions.
	4.2.2.2		BI2.52	Calculating the Rate of Blood Flow I	Calculate rate of blood flow. Word problems and no unit conversions.
	4.2.2.2		BI2.53	Calculating the Rate of Blood Flow II	Calculate rate of blood flow. Word problems and unit conversions.
Topic 2: Organisation	4.2.2.1	Diagnostic: Enzymes & Digestion	BI2.10	Enzymes: Structure & Function	Describe the structure of enzymes and the lock and key model.
	4.2.2.1 / 4.4.2.3		BI2.11	Enzymes: Metabolism	Define metabolism and state that enzymes regulate metabolism.
	4.2.2.1		BI2.12	Enzymes: Factors Affecting Activity	State that temperature and pH affect the rate of an enzyme catalysed reaction.
	4.2.2.1		BI2.13	Enzymes: Collision Theory	Use collision theory to explain how concentration, surface area, temperature and catalyst (including enzymes) affect the rate of reaction.
	4.2.2.1		BI2.14	Enzymes: Explaining Factors Affecting Activity	Explain why temperature and pH affect the rate of an enzyme catalysed reaction.
	4.2.2.1		BI2.15	Enzymes: Rate Calculations I	Calculate rate of enzyme driven reactions. Word problems and no unit conversions.
	4.2.2.1		BI2.16	Enzymes: Rate Calculations II	Calculate rate of enzyme driven reactions. Word problems, tables and unit conversions.
	4.2.2.1		BI2.17	Enzymes: Rate Calculations III	Calculate rate of enzyme driven reactions. Word problems, tables, graphs and unit conversions.
	4.2.2.1		BI2.18	Enzymes: Digestive Enzymes	State where digestive enzymes are produced/found, their substrates and products.
	4.2.2.1		BI2.19	The Production & Function of Bile	State where bile is produced and stored. Describe the role of bile in digestion.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 2: Organisation	4.2.2.1	Diagnostic: Enzymes & Digestion	BI2.20	Enzymes: Describing Enzyme Activity Data	Describe patterns in enzyme activity data in graphs and tables.
	4.2.2.1		BI2.21	Enzymes: Interpreting Enzyme Activity Data	Interpret data to explain enzyme activity and apply knowledge.
	4.2.2.1		BI2.22	Required Practical 3: Qualitative Carbohydrate Tests	Use iodine solution and Benedict's reagent to test for carbohydrates (glucose and starch).
	4.2.2.1		BI2.23	Required Practical 3: Qualitative Protein Tests	Use biuret reagent to test for proteins.
	4.2.2.1		BI2.24	Required Practical 3: Qualitative Lipid Tests	Use ethanol and water or Sudan III solution to test for lipids.
	4.2.2.1		BI2.25	Required Practical 3: Testing Foods for Biological Molecules	Use reagents to test for carbohydrates (glucose and starch), lipids and protein in a range of foods.
	4.2.2.1		BI2.26	Required Practical 4: Effect of pH on Amylase - Method	Investigate the effect of pH on the rate of reaction of amylase.
	4.2.2.1		BI2.27	Required Practical 4: Effect of pH on Amylase - Analysis & Concl.	Investigate the effect of pH on the rate of reaction of amylase.
	4.2.2.5	Diagnostic: Health & Non-Communicable Disease	BI2.54	Health & Disease	Define health, disease, communicable disease and non-communicable disease. Give examples of factors that affect health.
	4.2.2.6		BI2.55	Risk Factors & Causal Mechanisms	Define risk factor, causal mechanism, causation and correlation. Give some general examples.
	4.2.2.5		BI2.56	Disease Interactions	Give examples of disease interactions.
	4.2.2.6		BI2.57	The Costs of Non-Communicable Disease	Describe the human and financial cost of non-communicable disease to an individual, a local community, a nation or globally.
	4.2.2.6		BI2.58	Smoking & Disease	Describe the effect of smoking on the incidence of non-communicable disease.
	4.2.2.6		BI2.59	Alcohol & Disease	Describe the effect of drinking alcohol on the incidence of non-communicable disease.
	4.2.2.6		BI2.60	Diet, Exercise, Obesity & Disease	Describe the effect of diet, exercise and obesity on the incidence of non-communicable disease.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Organisation	4.2.2.7	Diagnostic: Health & Non-Communicable Disease	BI2.61	Benign & Malignant Tumours	Describe the changes in cells that can lead to tumour growth, describe the characteristics of benign and malignant tumours and give risk factors for developing cancers.
	4.2.2.6		BI2.62	Studying Disease	Extract & interpret information about disease and risk factors from charts, graphs and tables.
	4.2.3.1 / 4.2.3.2	Diagnostic: Plant Anatomy	BI2.75	Plant Organs & Organ Systems	Give a definition of a cell, tissue, organ, organ system and organism. Identify plant organs and describe the system for transporting substances around the plant.
	4.2.3.1		BI2.76	Describing the Structure & Function of Plant Tissues	Describe the structure of different plant tissues and give their functions.
	4.2.3.1		BI2.77	Explaining the Structure of Plant Tissues	Explain how plant tissues are adapted for their functions.
	4.2.3.2		BI2.78	Gas Exchange in Plants	Describe how gases are exchanged in plants, the leaf adaptations and how leaves compare to lungs. Explain the net movement of gases in the daylight compared to night.
	4.2.3.2		BI2.79	Estimating the Surface Area of a Leaf	Use squared paper to estimate the surface area of a leaf.
	4.2.3.2		BI2.80	Investigating Stomata	Investigate the number of stomata using nail varnish or by peeling the epidermis. Assumes prior knowledge of using a microscope.
	4.2.3.2		BI2.81	Stomata Calculations & Estimations	Estimate the number of stomata found on a leaf. Use calculations to compare the number of stomata on different leaves, or between the surface and underside of leaves.
	4.2.3.2		BI2.82	Plant Roots: Absorbing Water & Minerals	Describe and explain how plants absorb water and minerals. Give adaptations of root cells that maximise the rate of absorption.
	4.2.2.1	Diagnostic: The Chemistry of Food	BI2.06	Healthy Diet	Describe the main components of a healthy human diet and explain why these components are needed.
	4.2.2.1		BI2.07	Chemistry of Food: Carbohydrates	Describe the structure of carbohydrates and give examples of how they are used by organisms.
	4.2.2.1		BI2.08	Chemistry of Food: Proteins	Describe the structure of proteins and state how they are used by organisms.
	4.2.2.1		BI2.09	Chemistry of Food: Lipids	Describe the structure of lipids and state how they are used by organisms.
	4.2.1		BI2.01	Animal Tissues	Give a definition of a tissue and some examples from animals.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 2: Organisation	4.2.1	Diagnostic: The Digestive System	BI2.02	Human Organs	Give a definition of an organ, identify some examples from humans and give their functions.
	4.2.1		BI2.03	Human Organ Systems	Give a definition of an organ system, identify some examples from humans and give their functions.
	4.2.2.1		BI2.04	The Human Digestive System	Describe how several organs work together to digest and absorb food.
	4.2.2.1		BI2.05	The Functions of the Digestive Organs	Describe the functions of the organs in the digestive system.
	4.2.3.2	Diagnostic: Transpiration & Translocation	BI2.83	Transpiration	Describe transpiration and the transpiration stream.
	4.2.3.2		BI2.84	Transpiration: Factors Affecting the Rate	State which factors increase the rate of transpiration and which decrease it.
	4.2.3.2		BI2.85	Transpiration: Explaining Effects	Explain why some factors increase the rate of transpiration and some decrease it.
	4.2.3.2		BI2.86	Transpiration: Investigating	Describe the use of a potometer. Requires knowledge of transpiration.
	4.2.3.2		BI2.87	Transpiration: Calculating the Rate	Calculate the rate of transpiration from tables and graphs. Includes unit conversions.
	4.2.3.2		BI2.88	Interpreting Stomata & Transpiration Data I	Interpret more simple data sets in terms of factors affecting transpiration. Requires previous knowledge of how and why various factors affect transpiration.
	4.2.3.2		BI2.89	Interpreting Stomata & Transpiration Data II	Interpret more complex data sets in terms of factors affecting transpiration. Requires previous knowledge of how and why various factors affect transpiration.
	4.2.3.2		BI2.90	Translocation	Describe how sugars are transported in plants.
	4.2.3.2		BI2.91	Comparing Transpiration & Translocation	Compare the function of xylem and phloem. Requires previous knowledge of the structure of the tissues, transpiration and translocation.
	4.2.2.4	Diagnostic: Treating Cardiovascular Disease	BI2.65	Coronary Heart Disease	Describe coronary heart disease, give risk factors and explain how it can lead to a heart attack.
	4.2.2.4		BI2.68	Stents	Describe the purpose and the fitting of stents. Give some benefits and risks of the surgery.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Organisation	4.2.2.4	Diagnostic: Treating Cardiovascular Disease	BI2.69	Coronary Artery Bypass	Describe the purpose and the fitting of bypass vessel grafts. Give some benefits and risks of the surgery.
	4.2.2.4		BI2.70	Cholesterol & Statins	Describe cholesterol as a lipid, give the risks of high cholesterol and lifestyle factors that raise/lower blood cholesterol.
	4.2.2.4		BI2.71	Faulty Heart Valves & Replacing Them	Describe the purpose and fitting of replacement heart valves. Compare natural tissue valves with prostheses. Give some benefits and risks of the surgery.
	4.2.2.4		BI2.72	Heart Transplants	Describe the purpose and the fitting of heart and heart-lung transplants. Give some benefits and risks of the surgery.
	4.2.2.4		BI2.73	Artificial Hearts	Describe the purpose and the fitting of artificial. Give some benefits and risks of the surgery and of using prostheses.
	4.2.2.4		BI2.74	Treating Heart Disease: A Summary	Identify and compare heart disease treatments. Assumes prior knowledge of heart pathologies and treatments.
Topic Reviews	Topic Review	-	BI2.92	Topic 2 Review: Organisation - Set A	Biology Topic 2 Review for Combined Science AQA Trilogy and GCSE Biology.
	Topic Review	-	BI2.93	Topic 2 Review: Organisation - Set B	Biology Topic 2 Review for Combined Science AQA Trilogy and GCSE Biology.
Topic 3: Infection & Response	4.3.1.9	Diagnostic: Developing Drugs	BI3.32	Developing Drugs: Discovery	Describe how aspirin, digitalis and penicillin were discovered and how they work.
	4.3.1.9		BI3.33	Developing Drugs: Key Words	Define the key words relating to all stages of drug development.
	4.3.1.9		BI3.34	Developing Drugs: Preclinical Trials	Describe preclinical trials. State reasons for and against testing on animals.
	4.3.1.9		BI3.35	Developing Drugs: Clinical Trials - Phase 1	Describe phase 1 trials. Explain why testing is carried out on healthy volunteers.
	4.3.1.9		BI3.36	Developing Drugs: Clinical Trials - Phase 2	Describe phase 2 trials. Describe and explain why phase 2 trials are randomised, double blind and placebo-controlled.
	4.3.1.9		BI3.37	Developing Drugs: Clinical Trials - Phase 3	Describe phase 3 trials. Describe and explain why phase 3 trials are randomised, double blind and placebo-controlled. Explain the ethics of using a placebo.
	4.3.1.10		BI3.38	Developing Drugs: Peer Review	Explain why peer review is needed and describe the function of regulatory authorities.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 3: Infection & Response	4.3.1.9	Diagnostic: Developing Drugs	BI3.39	Developing Drugs: Post-Marketing Surveillance	Explain why phase 4 / post-marketing surveillance is required. Describe the participants involved, the length of the trial and why that is important.
	4.3.1.9		BI3.40	Developing Drugs: Summary	Describe and give reasons for each stage of the drug development process. Assumes some knowledge of keywords and scientific method.
	Supplementary		BI3.41	Development of the COVID Vaccine	Compare the average time for a vaccine to be developed with the time it took for the first COVID vaccine to be made. Explain why COVID vaccines have been made and approved so quickly. Define novel virus, genetic sequence and mRNA.
	4.3.1.6	Diagnostic: Human Immunity & Defence	BI3.20	Human Non-Specific Defences	Describe the non-specific defence systems of the human body against pathogens.
	Supplementary		BK4.07	The Lymphatic System	To be able to describe the function of the lymphatic system.
	4.3.1.6		BI3.21	The Immune System	Describe phagocytosis, antibody production and antitoxin production.
	4.3.1.6		BI3.22	Antigens, Antibodies & Immunity	Define antigen & antibody. Describe the specific nature of antibodies, the 'memory' of the immune system and the primary and secondary immune responses.
	4.3.1.1	Diagnostic: Infectious Diseases	BI3.09	Viruses	Describe viruses and give some common examples.
	4.3.1.2		BI3.10	Measles	Describe measles as an example of a viral disease of humans. Give the symptoms of measles, its mode of transmission, complications and treatments/vaccinations.
	4.3.1.2		BI3.11	HIV & AIDS	Describe HIV as an example of a virus that infects humans. Give the symptoms of HIV infection & AIDS, its mode of transmission, complications and treatments.
	4.3.1.2		BI3.12	Tobacco Mosaic Virus	Describe TMV as an example of a virus that infects plants. Give the symptoms of TMV infection, its mode of transmission and controlling the spread of infection.
	Supplementary		BI3.13	Fungi	Describe fungi and give some common examples.
	4.3.1.4		BI3.14	Rose Black Spot	Describe rose black spot as an example of a fungal disease of plants. Give the symptoms, its mode of transmission and controlling the spread of infection.
	Supplementary		BI3.15	Protists	Describe protists and give some common examples.
	4.3.1.5		BI3.16	Malaria	Describe malaria as an example of a protist disease of humans. Give the symptoms of malaria infection, its mode of transmission, complications and treatments.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 3: Infection & Response	4.3.1.3	Diagnostic: Infectious Diseases	BI3.17	Salmonella	Describe salmonella food poisoning as an example of a bacterial disease of animals. Give the symptoms, its mode of transmission and controlling the spread of infection.
	4.3.1.3		BI3.18	Gonorrhoea	Describe gonorrhoea as an example of a bacterial disease of animals. Give the symptoms, its mode of transmission and controlling the spread of infection.
	4.3.1.3		BI3.19	Summary: Communicable Diseases	Compare and contrast measles, HIV, AIDS, TMV, rose black spot, malaria, salmonella & gonorrhoea. Give the symptoms of infection with any of these pathogens, their modes of transmission and controlling the spread of infection. Assumes some background knowledge of these particular diseases, the spread of disease, controlling the spread of disease and pathogens.
	4.3.1.8	Diagnostic: Medical Drugs	BI3.28	Medical Drugs: Painkillers	Give definitions of medical drugs and painkiller. Identify when painkillers might be used and what they can/cannot treat.
	4.3.1.8		BI3.29	Medical Drugs: Antibiotics	Give definitions of medical drugs and antibiotic. Identify when antibiotics might be used and what they can/cannot treat.
	4.3.1.8		BI3.30	Medical Drugs: Other Antimicrobials	Give definitions of antimicrobial, antiseptic, disinfectant, antiviral, antifungal, fungicide and antiparasitic. Identify when they might be used and what they can/cannot treat.
	4.3.1.8		BI3.31	Medical Drugs: Summary	Give definitions of medical drug, painkiller, antimicrobial, antiseptic, disinfectant, antibiotic, antiviral, antifungal, fungicide and antiparasitic. Identify when they might be used and what they can/cannot treat.
	Prior	Diagnostic: The Spread of Communicable Disease	BI3.01	Introduction to Pathogens	Define 'pathogen', give viruses, bacteria, protists and fungi as examples of pathogens and identify them from images or diagrams.
	4.3.1.1		BI3.02	Spread of Communicable Disease in Plants	Give ways pathogens can spread between plants.
	4.3.1.1		BI3.03	Controlling the Spread of Disease in Plants	Give ways the spread of pathogens between plants can be controlled.
	4.3.1.1		BI3.04	Spread of Communicable Disease in Animals	Give ways pathogens can spread between animals.
	4.3.1.1		BI3.05	Controlling the Spread of Disease in Animals	Give ways the spread of pathogens between animals can be controlled.
	Supplementary		BI3.06	Vectors of Disease	Describe a vector as an organism that transmits a pathogen from one individual to another and give some common examples.
	Supplementary		BI3.07	Outbreaks of Disease	Define endemic level, epidemic and pandemic. Describe factors that influenced the spread of the 1918 influenza pandemic. Give examples of how epidemics may arise, such as new strains emerging and host behaviour.
	Supplementary		BI3.08	Controlling Outbreaks of Disease	Give ways the spread of pathogens can be controlled and disease outbreaks can be contained.

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Topic 3: Infection & Response	4.3.1.7	Diagnostic: Vaccinations	BI3.23	Vaccinations: Traditional Vaccines	Describe vaccines that contain attenuated pathogens or parts of pathogens and explain how they work. Describe the primary and secondary immune response and how this applies to vaccination programs.
	Supplementary		BI3.24	Vaccinations: mRNA Vaccines	Describe mRNA vaccines and explain how they work. Describe the primary and secondary immune response and how this applies to vaccination programs. Includes some graph reading/interpreting.
	Supplementary		BI3.25	Vaccinations: Dealing with Variants	Explain what variants of pathogens are and how vaccine development attempts to tackle them.
	Supplementary		BI3.26	Vaccinations: Herd immunity	Describe and explain herd immunity. Compare the eradication of small pox with the reemergence of measles.
	4.3.1.7		BI3.27	Vaccinations: Misconceptions	Describe some common misconceptions regarding vaccines and explain the science behind the corrections.
Topic Reviews	Topic Review	-	BI3.57	Topic 3 Review: Infection & Response - Set A	Biology Topic 3 Review for Combined Science AQA Trilogy.
	Topic Review	-	BI3.58	Topic 3 Review: Infection & Response - Set B	Biology Topic 3 Review for Combined Science AQA Trilogy.
Topic 4: Bioenergetics	4.4.2.2	Diagnostic: Exercise, Cardiac Output & Metabolism	BI4.40	Effect of Exercise on the Body	Describe skeletal muscle and how the body responds to exercise.
	4.4.2.2		BI4.41	Explaining the Effects of Exercise on the Body	Explain the adaptations of skeletal muscle and how the body responds to exercise.
	Supplementary		BI4.42	Cardiac Output	Describe the structure and functions of parts of the heart. Define cardiac output, explain stroke volume & give the equation for cardiac output.
	Supplementary		BI4.43	Calculating Cardiac Output I	Calculate cardiac output. Word problems and no unit conversions.
	Supplementary		BI4.44	Calculating Cardiac Output II	Calculate cardiac output. Word problems, tables and unit conversions.
	Supplementary		BI4.45	Calculating Cardiac Output III	Calculate cardiac output. Word problems, tables, graphs and unit conversions.
	Supplementary		BI4.46	Rearranging Cardiac Output	Rearrange cardiac output to find heart rate and stroke volume. Includes word problems, tables, graphs and unit conversions.
	Supplementary		BI4.47	Describing Cardiac Output Data	Describe patterns in cardiac output data in graphs and tables. Includes calculating cardiac output with no unit conversions.

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Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 4: Bioenergetics	Supplementary	Diagnostic: Exercise, Cardiac Output & Metabolism	BI4.48	Interpreting Cardiac Output Data	Interpret data to explain cardiac output data and apply knowledge. Includes calculating cardiac output with no unit conversations.
	4.4.2.2		BI4.49	Oxygen Debt	Describe oxygen debt is and explain why it occurs.
	4.4.2.3		BI4.51	Metabolism	Define metabolism and metabolic rate. Give examples of metabolic processes. Explain the role of enzymes in metabolism.
	Supplementary		BI4.52	Photosynthesis & Respiration	Describe how respiration and photosynthesis are linked in plants and animals. Explain the importance of photosynthesis to all life on Earth.
	Supplementary		BI4.53	Practical: Using a Respirometer	Use a respirometer to demonstrate that oxygen is removed from the air when an organism respires.
	Supplementary		BI4.54	Practical: Respiration & Indicators	Demonstrate an organism is respiring by detecting the release of carbon dioxide using hydrogen carbonate indicator.
	Supplementary		BI4.55	Practical: Respiration & Temperature Change	Demonstrate that an organism is respiring by measuring the temperature change.
	Supplementary		BI4.56	Practical: Respiration & Limewater	Demonstrate that an organism is respiring by observing a chemical change in limewater.
	4.4.1.1	Diagnostic: Introduction to Photosynthesis	BI4.01	Introduction to Photosynthesis	State that glucose is a store of chemical energy and why it is important to organisms. Explain the importance of producers.
	4.4.1.1		BI4.02	Photosynthesis: Word Equation	Define photosynthesis. State the word equation for photosynthesis.
	4.4.1.1		BI4.03	Photosynthesis: Symbol Equation	Define photosynthesis. State the word and symbol equations for photosynthesis.
	4.4.1.2		BI4.04	Photosynthesis: Leaf Adaptations	Describe & explain the internal and external adaptations of a leaf.
	4.4.1.3		BI4.05	Photosynthesis: How Plants Use Glucose	Describe how plants and algae use the glucose produced during photosynthesis.
	4.4.1.3		BI4.06	Practical: Fate of Glucose & Starch	Describe how a plant can be tested for starch to show that photosynthesis has taken place.
	4.4.1.1		CH5.13	Endothermic Reactions: Photosynthesis	Describe photosynthesis as the endothermic chemical process. Includes the word & symbol equation.

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Topic 4: Bioenergetics	4.4.1.2	Diagnostic: Rate of Photosynthesis	BI4.07	Rate of Photosynthesis: Introduction	Define the rate of a chemical reaction and the rate of photosynthesis.
	4.4.1.2		BI4.08	Rate of Photosynthesis: Describing Limiting Factors	Describe how carbon dioxide, light intensity, temperature and chlorophyll concentration affect the rate of photosynthesis.
	4.4.1.2		BI4.09	Rate of Photosynthesis: Explaining Limiting Factors	Explain how carbon dioxide, light intensity, temperature and chlorophyll concentration affect the rate of photosynthesis.
	4.4.1.2		BI4.10	Rate of Photosynthesis: Interpreting Data of Limiting Factors I	Interpret data in graphs for rate of photosynthesis against carbon dioxide concentration, light intensity or temperature. Does not include interacting factors.
	4.4.1.2		BI4.15	Rate of Photosynthesis: Measuring	Describe how the rate of photosynthesis can be measured using pondweed. Covers counting bubbles, gas volume in measuring cylinder and gas syringe.
	RP 5		BI4.16	Required Practical 5: Photosynthesis & Light Intensity	Investigate the effect of light intensity on the rate of photosynthesis using pondweed.
	4.4.1.2		BI4.18	Practical: Photosynthesis & Temperature	Investigate the effect of temperature on the rate of photosynthesis using pondweed.
	4.4.1.2		BI4.19	Practical: Photosynthesis & Carbon Dioxide Concentration	Investigate the effect of carbon dioxide on the rate of photosynthesis using pondweed.
	4.4.1.3		BI4.20	Practical: Photosynthesis & Chlorophyll	Describe how a variegated plant can be tested for starch using iodine to show that chlorophyll is needed for photosynthesis to take place.
	4.4.1.2		BI4.21	Rate of Photosynthesis: Calculating I	Calculate rate of photosynthesis. Word problems and no unit conversions.
	4.4.1.2		BI4.22	Rate of Photosynthesis: Calculating II	Calculate rate of photosynthesis. Word problems, tables and linear graphs. No unit conversions.
	4.4.1.4		BI4.27	Photosynthesis & Biomass	Explain how biomass is made and the importance of photosynthesis in supplying biomass to all other organisms on Earth.
	4.4.2.1		BI4.28	Introduction to Respiration	State that all the energy needed for life processes is transferred by respiration. Describe respiration as the breakdown of organic molecules.
	4.4.2.1	Diagnostic: Respiration	BI4.29	Aerobic Respiration: Word Equation	Describe aerobic respiration and give the word equation.
	4.4.2.1		BI4.30	Aerobic Respiration: Symbol Equation	Describe aerobic respiration and give the word and symbol equations.

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Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 4: Bioenergetics	4.4.2.1	Diagnostic: Respiration	BI4.31	Anaerobic Respiration in Animals: Word Equation	Describe the process of anaerobic respiration in animals and give the word equation.
	4.4.2.1		BI4.33	Anaerobic Respiration in Plants: Word Equation	Describe the process of anaerobic respiration in plants and give the word equation.
	4.4.2.1		BI4.35	Using Respiration in Yeast	Describe the process of anaerobic respiration/fermentation in yeast. Explain the economic importance of aerobic respiration and fermentation in making bread and alcoholic drinks.
	4.4.2.1		BI4.36	Comparing Anaerobic Respiration in Animals, Plants & Fungi	Compare the site, reactant(s), products of and energy released by anaerobic respiration in animals, plants and fungi (yeast). Includes word equations.
	4.4.2.1		BI4.37	Comparing Aerobic & Anaerobic Respiration	Compare the site, reactant(s), products of and energy released by anaerobic and aerobic respiration in animals, plants and fungi (yeast). Includes word equations.
	4.4.2.1		CH5.06	Exothermic Reactions: Respiration	Describe respiration as an exothermic chemical process. Includes equations for aerobic & anaerobic respiration.
	Supplementary		BI4.38	Importance of Anaerobic Respiration in Plants & Yeast	Describe the process of anaerobic respiration in plants and yeast and when it occurs. Explain the economic importance of anaerobic respiration in yeast.
	4.4.2.2		BI4.39	Importance of Anaerobic Respiration in Animals	Describe the process of anaerobic respiration in animals and explain why it occurs.
Topic Reviews	Topic Review	-	BI4.57	Topic 4 Review: Bioenergetics - Set A	Biology Topic 4 Review for Combined Science AQA Trilogy Foundation Tier and GCSE Biology Foundation Tier.
	Topic Review	-	BI4.58	Topic 4 Review: Bioenergetics - Set B	Biology Topic 4 Review for Combined Science AQA Trilogy Foundation Tier and GCSE Biology Foundation Tier.
Paper Reviews	Topic Review	-	BI4.65	Paper 1 Review: Biology - Set A	Biology Paper 1 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	BI4.66	Paper 1 Review: Biology - Set B	Biology Paper 1 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 5: Homeostasis & Response	4.5.3.2	Diagnostic: Blood Glucose Levels	BI5.033	Endocrine System: Insulin & Blood Glucose	Describe the control of blood glucose.
	4.5.3.2		BI5.037	Diabetes: Type 1	Describe type 1 diabetes, its causes, onset & treatments.
	4.5.3.2		BI5.038	Diabetes: Type 2	Describe type 2 diabetes, its causes, onset & treatments.

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Topic 5: Homeostasis & Response	4.5.3.2	Diagnostic: Blood Glucose Levels	BI5.039	Diabetes: Comparing Type 1 & Type 2	Compare & constrast type 1 & type 2 diabetes.
	4.5.3.2		BI5.040	Diabetes: Describing Data	Describe patterns in blood glucose and diabetes prevalence data in graphs and tables.
	4.5.3.2		BI5.041	Diabetes: Interpreting Data	Describe and explain blood sugar and diabetes data by applying knowledge.
	4.5.3.4	Diagnostic: Contraception	BI5.063	Contraception: Introduction	Describe fertilisation and the ways contraception aims to prevent it. Does not include individual methods of contraception.
	4.5.3.4		BI5.064	Contraception: Barrier Methods	Describe the use of internal/external condoms and diaphragms. Give their advantages and disadvantages.
	4.5.3.4		BI5.065	Contraception: Oral Contraceptives	Describe the use of the combined pill and the progesterone-only pill. Give their advantages and disadvantages.
	4.5.3.4		BI5.067	Contraception: Contraceptive Patch	Describe the use of the contraceptive patch. Give its advantages and disadvantages.
	4.5.3.4		BI5.071	Contraception: Surgical Methods	Describe surgical methods of contraception. Give their advantages and disadvantages.
	4.5.3.4		BI5.072	Contraception: Emergency Contraception	Describe the use of the emergency contraceptive pills and the IUD as emergency contraception. Give their advantages and disadvantages.
	4.5.3.4		BI5.074	Contraception: Spermicides	Describe the use of spermicides. Give their advantages and disadvantages.
	4.5.3.4		BI5.075	Contraception: Fertility Awareness & Abstinence	Describe the use of withdrawal, fertility awareness & abstinence as forms of birth control. Give their advantages and disadvantages.
	4.5.3.4		BI5.076	Contraception: Summary	Describe the use of the combined pill, the progesterone only pill, contraceptive injection, contraceptive implant, contraceptive skin patch, internal condoms, external condoms, diaphragms, IUD, IUS, spermicides, withdrawal, fertility awareness and abstinence as forms of birth control.
	4.5.3.4		BI5.078	Contraception: Science, Ethics & Opinion	Give some of the arguments for and against the use of contraception. State that ethics cannot be dictated by science alone.
	4.5.3.4		BI5.069	Contraception: Long Acting Reversible Methods	Describe the use of the contraceptive injection, the contraceptive implant, IUD & IUS. Give their advantages and disadvantages.
	4.5.1	Diagnostic: Homeostasis	BI5.001	Homeostasis	Define homeostasis and describe why it is important.

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Topic 5: Homeostasis & Response	4.5.1	Diagnostic: Homeostasis	BI5.002	Receptors	Recall the different sense organs and the types of receptor cell they contain.
	4.5.1		BI5.003	Coordination Centres	Describe the role of coordination centres in control systems and give examples.
	4.5.1		BI5.004	Effectors	Describe the role of effectors in control systems and give examples.
	4.5.1		BI5.005	Homeostasis Control Systems	Describe a stimulus and the role of receptors, coordination centres and effectors in homeostasis control systems.
	Prior	Diagnostic: Puberty & the Menstrual Cycle	BI5.056	Human Life Cycle	List the human life stages and when they occur.
	4.5.3.3		BI5.057	Puberty	Describe the development of secondary sex characteristics during puberty.
	4.5.3.3		BI5.058	Menstrual Cycle	Describes the stages of the menstrual cycle.
	4.5.3.3		BI5.059	Endocrine System: Menstrual Cycle Hormones	State the roles of oestrogen, progesterone, LH & FSH in the menstrual cycle. Does not include interactions between these hormones.
	4.5.3.1	Diagnostic: The Endocrine System	BI5.029	Endocrine System: The Pituitary Gland	Explain the importance of the pituitary (master) gland in regulating body function.
	4.5.2.1, 4.5.3.1		BI5.030	Nerve Impulses vs Hormones	Compare & contrast the 'messenger systems' in the human body.
	4.5.2.1	Diagnostic: The Nervous System	BI5.009	Nervous System: Introduction	An introduction to the nervous system, its structure and function.
	4.5.2.1		BI5.010	Nervous System: Neurones & Nerves	Describe, explain and compare the structure and function of sensory, motor and relay neurones.
	4.5.2.1		BI5.011	Nervous System: Synapses	Describe a synapse and the role of neurotransmitters.
	4.5.2.1		BI5.012	Nervous System: Reflexes	Describe a reflex arc and give examples of a reflex action.
	RP 6		BI5.013	Required Practical 6: Reaction Time	Investigate the effect of caffeine on reaction time using the 'ruler drop' test.

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Topic 5: Homeostasis & Response	4.5.2.1	Diagnostic: The Nervous System	BI5.015	Reaction Time: Describing Nervous System Data	Describe patterns in reaction time data that are presented in tables.
	4.5.2.1		BI5.016	Reaction Time: Interpreting Nervous System Data	Interpreting patterns in reaction time data that is presented in tables.
	4.5.3.1		BI5.027	Endocrine System: Introduction	Define and describe hormones, glands and target organs.
	4.5.3.1		BI5.028	Endocrine System: Glands	Describe the location & function of the major glands in the endocrine system.
Topic 6: Inheritance, Variation & Evolution	4.6.4	Diagnostic: Classification	BI6.106	Pre-Linnaean Classification of Organisms	Give brief descriptions of pre-Linnaean classification.
	4.6.4		BI6.107	Linnaean System of Classification	Describe and use the Linnaean system of classification.
	4.6.4		BI6.108	Binomial System	Describe and use the binomial system.
	4.6.5		BI6.109	Three-Domain System of Classification	Describe and use the three-domain system developed by Carl Woese.
	4.6.4		BI6.110	Developments in Classification Systems	Describe the impact of developments in biology on classification systems.
	4.6.5		BI6.111	Evolutionary Trees: Interpreting	Describe an evolutionary tree, label the key parts and identify the most recent common ancestors and closest relatives from different evolutionary trees.
	4.6.3.1	Diagnostic: Evidence for Evolution	BI6.091	Evidence for Evolution	State how fossils and the fossil record, the discovery that genes are the hereditary material and antibiotic resistance all provide evidence for the theory of evolution.
	4.6.3.2		BI6.092	Formation of Fossils	Define a fossil. Describe the three main ways in which fossils can be formed.
	4.6.3.2		BI6.093	Early Life on Earth	State when living organisms first appeared on Earth and describe the early life forms that followed.
	4.6.3.2		BI6.094	Using the Fossil Record	Define the fossil record. Describe ways of using the fossil record. State and explain the reasons why the fossil record is incomplete.
	4.6.4		BI6.095	Evolutionary Trees	Describe an evolutionary tree and label the key parts.

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Topic 6: Inheritance, Variation & Evolution	4.6.3.2	Diagnostic: Evidence for Evolution	BI6.096	Interpreting Fossil Data	Identify patterns and interpret information from charts, graphs and tables such as evolutionary trees.
	4.6.3.3		BI6.097	Extinction	Give the definition of extinction. Describe factors which may contribute to the extinction of a species.
	4.6.3.1		BI6.098	Examples of Evolution: The Peppered Moth	Describe and explain the evolution of the peppered moth.
	4.6.3.1		BI6.104	Examples of Evolution: Antibiotic-Resistant Bacteria	Describe and explain the evolution of antibiotic-resistant bacteria.
	4.6.3.4		BI6.105	Dangers of Antibiotic-Resistant Bacteria	Describe and explain the dangers of antibiotic-resistance bacteria. Describe possible measures to help restrict the increase of antibiotic-resistant bacteria.
	4.6.2.2	Diagnostic: Evolution & Natural Selection	BI6.064	Evolution	Give the definition of evolution. State what characteristics are affected by evolution. Describe the evolution of the peppered moth.
	4.6.2.2		BI6.065	The Process of Natural Selection	Give the definition of natural selection and evolution. Describe the process of natural selection and how it can lead to evolution.
	4.6.2.2		BI6.066	The Importance of Mutation in Evolution	Give the definition of evolution and mutation. Explain, using real-life examples, how mutations are essential to evolution.
	4.6.2.2		BI6.067	Formation of a New Species	Describe how two populations of one species might end up becoming two species.
	4.6.2.2		BI6.068	Evolution: What is a Theory?	State the theory used to explain the diversity of life. Define a scientific theory. Describe the process that leads to a scientific theory being established. Give definitions for hypothesis, prediction, peer review, validity and false claim.
	4.6.2.2		BI6.069	Evolution by Natural Selection: Summary	State the theory of evolution. Define natural selection, describe the process of natural selection and how it can lead to evolution through examples. Use knowledge and understanding of natural selection and evolution to justify the theory of evolution.
	4.6.1.6	Diagnostic: Genetic Diagrams	BI6.031	Genetic Diagrams: Introduction	Describe what genetic diagrams show and deduce the possible gametes produced by an individual.
	4.6.1.6		BI6.032	Genetic Diagrams: Punnett Squares	Complete Punnett square diagrams. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.
	4.6.1.6		BI6.033	Genetic Diagrams: Interpreting Punnett Squares	Extract and interpret information from Punnett squares. Includes ratios, percentages, fractions and probability.
	4.6.1.6		BI6.038	Genetic Diagrams: Genetic Cross Diagrams	Complete genetic cross diagrams. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.

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Topic 6: Inheritance, Variation & Evolution	4.6.1.6	Diagnostic: Genetic Diagrams	BI6.039	Genetic Diagrams: Interpreting Genetic Cross Diagrams	Extract and interpret information from genetic cross diagrams. Predict the results of a single gene cross using ratios, percentages, fractions and probability.
	4.6.1.6		BI6.042	Genetic Diagrams: Family Trees	Complete family tree diagrams.
	4.6.1.6		BI6.043	Genetic Diagrams: Interpreting Family Trees	Extract and interpret information from family trees.
	4.6.2.3	Diagnostic: Genetic Engineering	BI6.071	Selective Breeding	Give the definition of selective breeding. Describe the process of selective breeding and explain, with examples, why humans have carried out selective breeding.
	4.6.2.3		BI6.072	Inbreeding	Give the definition of inbreeding. Describe its role in creating organisms with desired characteristics and its positive and negative impacts.
	4.6.2.3		BI6.073	The Impact of Selective Breeding	Explain the impact of selective breeding of food plants and domesticated animals, including the benefits and risks.
	4.6.2.4		BI6.074	Genetic Engineering	Give the definition of genetic engineering. Give examples of organisms that have been genetically modified and why. Describe the process of genetic engineering.
	4.6.2.4		BI6.075	GM Crops	Give the definition of genetic engineering. Give examples of crops that have been genetically modified and why.
	4.6.2.4		BI6.076	Genetic Modification & Inherited Disorders	Define genetic modification and inherited disorders. Give examples of how genetic modification is being used to overcome some inherited disorders.
	4.6.2.4		BI6.077	The Impact of Genetic Engineering	Give the definition of genetic engineering. Evaluate the positive and negative impacts of genetic engineering, as well as ethical considerations and concerns.
	4.6.1.7	Diagnostic: Genetics in Practice	BI6.048	Cystic Fibrosis: Introduction	Describe symptoms of cystic fibrosis and identify the genotype that results in it. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.
	4.6.1.7		BI6.049	Cystic Fibrosis: Genetic Diagrams	Complete & interpret Punnet squares, genetic crosses and family trees. Predict the chances of a child having cystic fibrosis using ratios, percentages, fractions and probability. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.
	4.6.1.7		BI6.051	Polydactyly: Introduction	Describe symptoms of polydactyly and identify the genotype that results in it. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.
	4.6.1.7		BI6.052	Polydactyly: Genetic Diagrams	Complete & interpret Punnet squares, genetic crosses and family trees. Predict the chances of a child having polydactyly using ratios, percentages, fractions and probability. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.
	4.6.1.8		BI6.054	Sex Determination in Humans: Introduction	Describe the human sex determination system, identify the most typical male and female genotypes and give typical features.

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Topic 6: Inheritance, Variation & Evolution	4.6.1.8	Diagnostic: Genetics in Practice	BI6.055	Sex Determination in Humans: Genetic Diagrams	Complete & interpret Punnet squares, genetic crosses and family trees. Predict outcomes using ratios, percentages, fractions and probability. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.
	4.6.1.7		BI6.057	Genetic Screening: Embryo & Foetal	Describe the methods of embryo and foetal screening to include: PGS, Amniocentesis, CVS, NIPT.
	4.6.1.7		BI6.058	Ethics of Genetic Screening: Embryo & Foetal	Ethics, advantages and disadvantages of each method of embryo and foetal screening.
	Supplementary	Diagnostic: Introduction to Genetics	BI6.010	Introduction to Genetics	Define genetics. Identify parents and offspring from simple diagrams.
	4.6.1.3		BI6.011	Genome to Genes	Define, describe & identify DNA, genes, chromosomes and genomes.
	4.6.1.3		BI6.020	Understanding the Human Genome	State that understanding the human genome is important for treating disease and for tracing human migration patterns from the past.
	4.6.1.6		BI6.022	Genes & Alleles	Define allele and explain the difference between dominant and recessive alleles. Does not include co-dominance.
	4.6.1.6		BI6.024	Zygosity	Identify heterozygous and homozygous individuals and explain the difference between dominant and recessive alleles. Does not include co-dominance.
	4.6.1.6		BI6.025	Genotypes & Phenotypes	Explain how genotype influences phenotype.
	4.6.1.6		BI6.028	Inheritance	Describe the process by which genetic information is passed from parent to offspring.
	4.6.1.6		BI6.029	Key Words in Genetics	Define and use the terms gamete, chromosome, gene, allele, dominant, recessive, homozygous, heterozygous, homozygous, genotype & phenotype.
	4.6.1.1	Diagnostic: Reproduction	BI6.001	Reproduction: Sexual	Describe sexual reproduction. Includes chromosome number, gametes and fertilisation.
	4.6.1.1		BI6.002	Reproduction: Asexual	Describe asexual reproduction. Includes chromosome number and clones.
	4.6.1.1		BI6.003	Reproduction: Summary	Describe and compare sexual and asexual reproduction.
	4.6.1.2		BI6.007	Cell Division: Meiosis	Explain how meiosis creates gametes with half the number of chromosomes and that are genetically different from each other and the parent cell.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 6: Inheritance, Variation & Evolution	4.6.1.2		BI6.008	Cell Division: Comparing Mitosis & Meiosis	Compare and contrast cell division by meiosis with cell division by mitosis.
	4.6.1.2		BI6.009	Fertilisation & Development of the Animal Embryo	Explain what happens to the chromosome number during fertilisation. Describe what happens after fertilisation to form an embryo.
	4.6.2.1	Diagnostic: Variation	BI6.059	Species & Variation	Give the definition of a species. Explain why individuals of the same species have similar features, but are not exactly the same.
	4.6.2.1		BI6.060	Continuous & Discontinuous Variation	Describe and give examples of continuous and discontinuous variation. Compare the two types of variations, including how continuous and discontinuous data are plotted.
	4.6.2.1		BI6.061	Causes of Variation	Explain how variation amongst individuals of the same places is caused. Give examples of charactersitics affected by genetic variation, environmental factors or both.
	4.6.2.1		BI6.062	Mutation & Variation	Describe what a mutation is, how mutations lead to variation and how they can affect phenotype.
Topic Reviews	Topic Review	-	BI6.116	Topic 6 Review: Inheritance, Variation & Evolution - Set A	Biology Topic 6 Review for Combined Science AQA Trilogy Foundation Tier
	Topic Review	-	BI6.117	Topic 6 Review: Inheritance, Variation & Evolution - Set B	Biology Topic 6 Review for Combined Science AQA Trilogy Foundation Tier
Topic 7: Ecology	4.7.3.5	Diagnostic: Climate Change	CH9.06	Climate Change: Natural Greenhouse Effect	Identify what the greenhouse effect is and describe how it impacts upon our planet.
	4.7.3.5		CH9.18	Climate Change: Human Factors	Describe the anthropogenic (human) causes of climate change.
	4.7.3.5		CH9.19	Climate Change: Since Industrialisation	Describe the impact of the industrial revolution on climate change.
	4.7.3.5		CH9.20	Climate Change: Enhanced Greenhouse Effect	Identify and describe what the enhanced greenhouse effect is.
	4.7.3.5		CH9.21	Climate Change: Enhanced Greenhouse Effect Impacts	Describe how the enhanced greenhouse effect impacts our planet.
	4.7.3.5		CH9.22	Climate Change: Peer Review	Explain what peer review is and why it is important for scientific research.
	4.7.1.1	Diagnostic: Competition & Adaptation	BI7.009	Interdependence	Explain the importance of the relationships between organisms in an ecosystem.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 7: Ecology	4.7.1.5	Diagnostic: Competition & Adaptation	BI7.010	Competition Between Plants	Describe the factors that plants compete for within an ecosystem.
	4.7.1.5		BI7.011	Competition Between Animals	Describe the factors that animals compete for within an ecosystem.
	4.7.1.4		BI7.012	Adaptations of Plants	Describe the functional, structural and behavioural adaptations of plants and explain how they help them to survive in different ecosystems.
	4.7.1.4		BI7.013	Adaptations of Animals	Describe the functional, structural and behavioural adaptations of animals and explain how they help them to survive in different ecosystems.
	4.7.1.5		BI7.014	Extremophiles	Describe the adaptations of organisms that live in the most extreme environmental conditions.
	4.7.2.2	Diagnostic: Cycles within Ecosystems	BI7.027	Cycling in Ecosystems	Explain the importance of cycling in ecosystems. State the three main cycles.
	4.7.2.2		BI7.028	The Carbon Cycle	Describe the processes of the carbon cycle.
	4.7.2.2		BI7.029	The Water Cycle	Describe the processes of the water cycle.
	4.7.2.2		BI7.030	The Decay Cycle	Describe the processes of the decay cycle.
	4.7.2.1	Diagnostic: Food Chains & Food Webs	BI7.015	Food Chains & Food Webs	Describe feeding relationships in terms of transfer of energy. Use food chains to represent simple feeding relationships in an ecosystem.
	4.7.2.1		BI7.016	Importance of the Producer	Explain the importance of producers in an ecosystem.
	4.7.2.1		BI7.017	Predator/Prey Cycles: Describing Data	Describe the changes in populations based on the relationship between the predator and its prey.
	4.7.2.1		BI7.018	Predator/Prey Cycles: Interpreting Data	Explain the changes in populations based on the relationship between the predator and its prey.
	4.7.3.1	Diagnostic: Human Impacts on Ecosystems	BI7.042	The Importance of Biodiversity	Explain the importance of biodiversity to the sustainability of the planet and to humans directly.
	4.7.3.1		BI7.043	Falling Biodiversity	Explain the reasons for the changing state of biodiversity on Earth.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 7: Ecology	4.7.3.2/3/4	Diagnostic: Human Impacts on Ecosystems	BI7.044	Human Impacts: Introduction	Explain how human activities are having an impact on ecosystems.
	4.7.3.2		BI7.045	Human Impacts: Waste Management	Explain the importance of managing the increasing waste from human activities and the biodiversity of the Earth.
	4.7.3.2		BI7.046	Human Impacts: Toxic Chemicals in Food Chains	Explain the impact of toxic chemicals when they enter food chains.
	4.7.3.2		CH9.08	Air Pollution from Fuels	Describe air pollution and pollutants from the combustion of fuels.
	4.7.3.2		BI7.047	Human Impacts: Water Pollution	Explain how water pollution occurs and the impact it has on biodiversity.
	4.7.3.2/3		BI7.048	Human Impacts: Land Pollution	Explain how land pollution occurs and the impact it has on biodiversity.
	Supplementary	Diagnostic: Introduction to Ecosystems	BI7.001	Types of Ecosystem	Describe a variety of different ecosystems. Define organism, habitat, population, community and ecosystem.
	4.7.1.1		BI7.002	Roles in Ecosystems	Define the different roles of organisms in an ecosystem.
	4.7.1.3		BI7.003	Biotic Factors	Define a biotic factor. Identify biotic factors. Describe the impact of changing biotic factors.
	4.7.1.3		BI7.004	Biotic Factors: Describing Data	Describe patterns in data represented in tables and graphs.
	4.7.1.3		BI7.005	Biotic Factors: Interpreting Data	Explain patterns in data in the context of biotic factors.
	4.7.1.2		BI7.006	Abiotic Factors	Define an abiotic factor. Identify abiotic factors. Describe the impact of changing abiotic factors.
	4.7.1.2		BI7.007	Abiotic Factors: Describing Data	Describe the patterns shown by data in tables and different types of graphs.
	4.7.1.2		BI7.008	Abiotic Factors: Interpreting Data	Explaining patterns in data using scientific knowledge and understanding.
	RPA 7/4.7.2.1	Diagnostic: Investigating Ecosystems	BI7.019	Investigating Ecosystems: Quadrats	Describe the different types of quadrats and their uses. Explain the importance of random sampling and sample size.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 7: Ecology	RPA 7/4.7.2.0	Diagnostic: Investigating Ecosystems	BI7.020	Investigating Ecosystems: Quadrat Calculations I	Calculate averages from a table of data.
	RPA 7/4.7.2.0		BI7.021	Investigating Ecosystems: Quadrat Calculations II	Estimate population size using calculations from quadrat samples.
	RPA 7/4.7.2.1		BI7.022	Investigating Ecosystems: Transects	Describe the use and purpose of a transect line sample.
	RPA 7/7.2.1		BI7.023	Required Practical 7: Ecological Sampling I Quadrats	Use sampling techniques to estimate population size.
	RPA 7/7.2.2		BI7.024	Required Practical 7: Ecological Sampling II Transects	Use sampling techniques to investigate changes in the distribution of organisms along a transect.
	4.7.3.3	Diagnostic: Land Use	BI7.052	Land Use: Farming	Explain how clearing land for farming impacts the environment.
	4.7.3.3		BI7.053	Land Use: Building	Explain how clearing land for building impacts the environment.
	4.7.3.3		BI7.054	Land Use: Quarrying & Mining	Explain how clearing land for quarrying and mining impacts the environment.
	4.7.3.3		BI7.055	Land Use: Landfill	Explain how clearing land for landfill impacts the environment.
	4.7.3.3		BI7.056	Land Use: Peat Bog Destruction	Explain how clearing land for peat bog destruction impacts the environment.
	4.7.3.3		BI7.057	Land Use: Deforestation	Explain how clearing land for deforestation impacts the environment.
	4.7.3.4		BI7.058	Land Use: Summary	Summarise the impact of farming, building, quarrying, mining, landfill, peat bog destruction and deforestation on the environment.
	4.7.3.6	Diagnostic: Maintaining Biodiversity	BI7.059	Maintaining Biodiversity: Conservation	Define conservation and state some of the projects designed to promote biodiversity.
	4.7.3.6		BI7.060	Maintaining Biodiversity: Breeding Programmes	Explain how breeding programmes aim to maintain biodiversity.
	4.7.3.6		BI7.061	Maintaining Biodiversity: Rare Habitats	Explain how the restoration of rare habitats can maintain or increase biodiversity.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 7: Ecology	4.7.3.6	Diagnostic: Maintaining Biodiversity	BI7.062	Maintaining Biodiversity: Field Margins & Hedgerows	Explain how the reintegration of field margins & hedgerows can maintain or increase biodiversity.
	4.7.3.6		BI7.063	Maintaining Biodiversity: Government Policy	Explain how the government policy can encourage the maintenance or improvement in biodiversity.
	4.7.3.6		BI7.064	Maintaining Biodiversity: Recycling	Explain how recycling programmes can have a positive impact on the biodiversity of the Earth.
	4.7.3.6		BI7.065	Maintaining Biodiversity: Ecotourism	Explain how the introduction of ecotourism projects can help to maintain or improve biodiversity.
	4.7.3.6		BI7.066	Maintaining Biodiversity: Forestry	Explained how sustainable forest management can maintain or improve biodiversity in an area.
	4.7.3.6		BI7.067	Maintaining Biodiversity: Summary	Summarise the key features of the most important projects aimed at maintaining or improving biodiversity.
	4.7.3.2	Diagnostic: Pollutants	CH9.09	Pollutants: Carbon Dioxide	Explain the formation and impact of carbon dioxide as a pollutant.
	4.7.3.2		CH9.10	Pollutants: Sulfur Dioxide	Explain the formation and impact of sulfur dioxide as a pollutant.
	4.7.3.2		CH9.11	Pollutants: Nitrogen Oxides	Explain the formation and impact of nitrogen oxides as pollutants.
	4.7.3.2		CH9.12	Pollutants: Particulates	Explain the formation and impact of particulates as pollutants.
	4.7.3.2		CH9.13	Pollutants: Carbon Monoxide	Explain the formation and impact of carbon monoxide as a pollutant.
	4.7.3.2		CH9.14	Pollutants: Methane	Explain the formation and impact of methane as a pollutant.
	4.7.3.2		BI7.049	Pollutants: Fertiliser	Explain the impact of fertiliser as a pollutant.
	4.7.3.2		BI7.050	Pollutants: Industrial Chemicals	Explain the impact of industrial chemicals as pollutants.
	4.7.3.2		BI7.051	Pollutants: Summary	Summarise the impact of the following pollutants on the environment: carbon dioxide, sulfur dioxide, nitrogen oxide, particulates, carbon monoxide, methane, fertiliser, and industrial chemicals.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic Reviews	Topic Review	-	BI7.093	Topic 7 Review: Ecology - Set A	Biology Topic 7 Review for Combined Science AQA Trilogy.
	Topic Review	-	BI7.094	Topic 7 Review: Ecology - Set B	Biology Topic 7 Review for Combined Science AQA Trilogy.

Course Content

Science Combined GCSE: AQA Trilogy (F) – Chemistry

Diagnostics 45 **Strands** 14 **Nuggets** 373

This course is mapped to the chemistry subject content of AQA GCSE Combined Science: Trilogy Foundation Tier.

AQA: 8464

QAN: 601/8758/X

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	45
Topic Reviews	20
Paper Reviews	2
Topic 1: Atomic Structure & the Periodic Table	52
Topic 2: Bonding, Structure & Properties of Matter	63
Topic 3: Quantitative Chemistry	19
Topic 4: Chemical Changes	55
Topic 5: Energy Changes	24
Topic 6: Rate & Extent of Chemical Change	29
Topic 7: Organic Chemistry	12
Topic: 8: Chemical Analysis	16
Topic 9: Chemistry of the Atmosphere	27
Topic 10: Using Resources	23
Maths Skills for Chemists	31

Diagnostics

A diagnostic is a baseline assessment.

Code	Strand
CH0.001	Diagnostic: Atoms, Elements & Compounds
CH0.002	Diagnostic: Atomic Structure
CH0.003	Diagnostic: Chemical Equations
CH0.005	Diagnostic: Pure Substances, Mixtures & Separation Techniques
CH0.006	Diagnostic: History of the Atom
CH0.007	Diagnostic: The Periodic Table
CH0.009	Diagnostic: Bonding in Metals
PH0.045	Diagnostic: Fundamental States of Matter
CH0.010	Diagnostic: Ionic Substances
CH0.012	Diagnostic: Covalent Bonding
CH0.013	Diagnostic: Small & Giant Covalent Substances
CH0.014	Diagnostic: Silicon Dioxide & Polymers
CH0.015	Diagnostic: Carbon Allotropes
CH0.016	Diagnostic: Identifying Bonding, Deducing Properties & Writing Equations
CH0.019	Diagnostic: Relative Formula Mass
CH0.021	Diagnostic: Percentage Mass Calculations
CH0.023	Diagnostic: Uncertainty of Repeated Measurements
CH0.026	Diagnostic: Concentration Calculations (g/dm^3)
CH0.034	Diagnostic: Oxidation & Reduction
CH0.036	Diagnostic: Reactivity Series
CH0.038	Diagnostic: Acids, Bases & Alkalis

Diagnostics continued

Code	Diagnostic Name
CH0.040	Diagnostic: Neutralisation
CH0.042	Diagnostic: Solubility
CH0.048	Diagnostic: Electrolysis
CH0.052	Diagnostic: Exothermic Reactions
CH0.053	Diagnostic: Endothermic Reactions
CH0.054	Diagnostic: Temperature Changes
CH0.061	Diagnostic: Introduction to Rates
CH0.063	Diagnostic: Using Data
CH0.065	Diagnostic: Rates Experiments
CH0.067	Diagnostic: Explain & Interpret Data
CH0.068	Diagnostic: Reversible Reactions & Equilibrium
CH0.070	Diagnostic: Alkanes

Code	Diagnostic Name
CH0.072	Diagnostic: Alkenes
CH0.080	Diagnostic: Identifying Pure Substances
CH0.082	Diagnostic: Paper Chromatography
CH0.084	Diagnostic: Testing for Gases
CH0.088	Diagnostic: The Earth's Atmosphere
CH0.089	Diagnostic: Climate Change
CH0.091	Diagnostic: Air Pollution
CH0.092	Diagnostic: Climate Change Mitigation & Adaptation
CH0.93	Diagnostic: Properties of Materials
CH0.94	Diagnostic: Using Resources
CH0.96	Diagnostic: Life Cycle Assessments
CH0.98	Diagnostic: Water

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 1: Atomic Structure and the Periodic Table	5.1.1.4	Diagnostic: Atomic Structure	CH1.08	Atomic Structure	Describe the structure of the atom.
	5.1.1.5		CH1.09	Size of Atoms	Recall the radius of an atom/nucleus and relate size and scale of atoms to objects.
	5.1.1.4		CH1.10	Atomic Number & Mass Number	Use the atomic number and mass number to calculate the numbers of subatomic particles.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 1: Atomic Structure and the Periodic Table	5.1.1.5	Diagnostic: Atomic Structure	CH1.11	Isotopes	Recall the definition of an isotope and apply it to familiar situations.
	5.1.1.4		CH1.12	What is Relative? Mass & Charges	Recall the relative masses/charges of subatomic particles and define relative atomic mass.
	5.1.1.6		CH1.13	Calculating Relative Atomic Mass	Calculate relative atomic mass.
	5.1.1.7		CH1.14	Electronic Structure	Recall the 2, 8, 8 structure and apply this to the first 20 elements.
	6.4.1.1		CH1.15	Changing Energy Levels	Recall that electron arrangements may change with the absorption/emission of electromagnetic radiation and apply this to familiar situations.
	5.1.1.1	Diagnostic: Atoms, Elements & Compounds	CH1.01	Atoms, Elements, Compounds & Molecules	An introduction to atoms, elements, compounds and molecules.
	5.1.1.1		CH1.02	Element Symbols	Use element symbols correctly.
	5.1.1.1		CH1.03	Names & Symbols of the First 20 Elements	Correctly use the names and symbols of the first 20 elements of the Periodic Table.
	5.1.1.1		CH1.04	Formulae for Elemental Molecules & Compounds	Recall and use the chemical formulae for common elemental molecules and compounds.
	5.1.1.1		CH1.05	Formulae for Compounds with Brackets	Recall and use the chemical formulae for compounds that include brackets.
	5.1.1.1		CH1.06	Naming Compounds	Describe and use the rules for naming compounds to recall and use the chemical formulae for common elemental molecules and compounds.
	5.1.1.1 / 5.2.2.2		CH1.07	State Symbols	Use state symbols correctly.
	5.1.1.1	Diagnostic: Chemical Equations	CH1.16	Chemical Reactions	Recognise when a simple chemical reaction has occured and use simple word equations.
	5.1.1.1		CH1.17	Writing Word Equations	Write and extract information from word equations.
	5.1.1.1		CH1.18	Writing Simple Formula Equations	Write and extract information from simple formula equations.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Atomic Structure and the Periodic Table	5.1.1.1	Diagnostic: Chemical Equations	CH1.19	Balancing Chemical Equations I	Balance simple chemical equations (no brackets).
	5.1.1.1		CH1.20	Balancing Chemical Equations II	Balance chemical equations (with brackets).
	5.1.1.3	Diagnostic: History of the Atom	CH1.32	Development of Scientific Models	Describe the scientific method and identify different types of model.
	5.1.1.3		CH1.33	Dalton's Atomic Theory of Matter	Describe and use early models of the atom.
	5.1.1.3		CH1.34	Thomson's Plum Pudding Model	Describe and use the Plum Pudding Model, and explain how the model was developed.
	5.1.1.3		CH1.35	Rutherford's Nuclear Model	Describe and use the Nuclear Model, and explain how the model was developed.
	5.1.1.3		CH1.36	Bohr's Planetary Model	Describe and use the Planetary Model, and explain how the model was developed.
	5.1.1.3		CH1.37	Discovery of Protons	Recall the discovery of protons and explain how this added to the model of the atom.
	5.1.1.3		CH1.38	Chadwick & the Discovery of the Neutron	Recall the discovery of neutrons and explain how this added to the model of the atom.
	5.1.1.3		CH1.39	History of the Atom - a Timeline	Recall the timeline of the atomic model and identify the different models from diagrams.
	5.1.1.3		CH1.40	Plum Pudding vs the Nuclear Model	Compare the Plum Pudding Model to the Nuclear Model of the atom.
	5.1.1.2 / 5.8.1.1	Diagnostic: Pure Substances, Mixtures & Separation Techniques	CH1.22	Pure Substances & Mixtures	Define 'pure' and 'mixture' and identify pure substances and mixtures from diagrams and text.
	5.1.1.2		CH1.23	Separating Mixtures	Identify different separating techniques and apply knowledge to solve simple problems.
	Supplementary		CH1.24	Keywords Relating to Solutions	Use the keywords relating to solutions correctly.
	5.1.1.2		CH1.25	Filtration	Recall the method for carrying out filtration and its uses.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 1: Atomic Structure and the Periodic Table	5.1.1.2	Diagnostic: Pure Substances, Mixtures & Separation Techniques	CH1.26	Evaporation	Recall the method for carrying out evaporation and its uses.
	5.1.1.2		CH1.27	Crystallisation	Recall the method for carrying out crystallisation and its uses.
	RP13		CH1.28	Practical: Simple Distillation	Recall the method for carrying out simple distillation and its uses.
	5.1.1.2		CH1.29	Fractional Distillation	Recall the method for carrying out fractional distillation and its uses.
	5.1.1.2		CH1.30	Paper Chromatography	Recall the method for carrying out paper chromatography and its uses.
	5.1.1.2		CH1.31	Which Separation Technique?	Apply knowledge of separation techniques to solve problems.
	5.1.2.1	Diagnostic: The Periodic Table	CH1.41	The Periodic Table	Use the modern periodic table.
	5.1.2.2		CH1.42	Early Periodic Tables	Describe and use early periodic tables, particularly Newlands'.
	5.1.2.2		CH1.43	Mendeleev & the Periodic Table	Describe and use Mendeleev's periodic table.
	5.1.2.2		CH1.44	Comparing the Periodic Tables of Newlands & Mendeleev	Compare Newlands' periodic table to Mendeleev's periodic table.
	5.1.2.2		CH1.45	Development of the Modern Periodic Table	Describe the arrangement of the modern periodic table and apply this knowledge.
	5.1.2.3 / 5.2.1.2		CH1.46	Forming Ions	Describe how ions form, draw and write the electronic structure of ions and identify ion formed using the periodic table.
	5.1.2.3		CH1.47	The Periodic Table: Metals & Non-metals	Identify metals and non-metals from their position on the periodic table. Describe and compare the properties and behaviour of metals and non-metals.
	Supplementary		CH1.48	Common Ions	Recall and use the formulae of common mono- and polyatomic ions.
	Supplementary		CH1.49	Identifying Atoms & Ions from Electronic Structure	Identify atoms and ions of the first twenty elements from their electron structure (written and drawn).

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Atomic Structure and the Periodic Table	5.1.2.4	Diagnostic: The Periodic Table	CH1.50	The Periodic Table: Group 0	Describe the electronic structure, properties and trends of Group 0 elements.
	5.1.2.5		CH1.51	The Periodic Table: Group 1	Describe the electronic structure, properties and trends of Group 1 elements.
	5.1.2.6		CH1.52	The Periodic Table: Group 7	Describe the electronic structure, properties and trends of Group 7 elements.
	5.1.2.5 / 5.1.2.6		CH1.53	The Periodic Table: Explaining Trends in Reactivity	Explain trends in reactivity using ideas of electron shielding.
	Topic Review	-	CH1.56	Topic 1 Review: Atomic Structure & Periodic Table - Set A	Chemistry topic 1 review for combined science aqa trilogy foundation tier.
	Topic Review	-	CH1.57	Topic 1 Review: Atomic Structure & Periodic Table - Set B	Chemistry topic 1 review for combined science aqa trilogy foundation tier.
Topic 2: Bonding, Structure and Properties of Matter	5.2.1.1	Diagnostic: Bonding in Metals	CH2.01	Introducing Chemical Bonds	Describe ionic, covalent and metallic bonds in terms of the transfer/sharing of electrons and in terms of electrostatic forces.
	5.2.1.5		CH2.02	Metallic Bonding	Identify and describe metallic bonds.
	5.2.1.5		CH2.03	Representing Metallic Bonds	Identify metallic bonding from 2D or 3D representations.
	5.2.2.7		CH2.04	Pure Metals	Identify and describe pure metals and their structure.
	5.2.2.7		CH2.05	Properties of Pure Metals	State the properties of pure metals and apply this knowledge to simple situations.
	5.2.2.7		CH2.06	Explaining the Properties Pure Metals	Explain the properties of pure metals in terms of their structure.
	5.2.2.7		CH2.07	Alloys & Their Properties	Explain the properties of alloys in terms of their structure and compare alloys to pure metals.
	5.2.2.7		CH2.08	Explaining the Properties of Alloys	Explaining the properties of alloys compared to pure metals, linking to their structure.
	5.2.2.8		CH2.09	Metals as Conductors	Explain the electrical and thermal conductivity of metals in terms of their structure.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Bonding, Structure and Properties of Matter	5.2.3.1	Diagnostic: Carbon Allotropes	CH2.40	Structure & Properties of Diamond	Describe the structure of diamond and give its properties.
	5.2.3.1		CH2.41	Explaining the Properties of Diamond	Explain the properties of diamond in terms of its structure.
	5.2.3.2		CH2.42	Structure & Properties of Graphite	Describe the structure of graphite and give its properties.
	5.2.3.2		CH2.43	Explaining the Properties of Graphite	Explain the properties of graphite in terms of its structure.
	5.2.3.1/5.2.3.2		CH2.44	Comparing Graphite & Diamond	Compare the structures of diamond and graphite. Explain the properties of graphite and diamond in terms of their structures.
	5.2.3.3		CH2.45	Structure & Properties of Graphene	Describe the structure of graphene and give its properties.
	5.2.3.3		CH2.46	Explaining the Properties of Graphene	Explain the properties of graphene in terms of its structure.
	5.2.3.2/5.2.3.3		CH2.47	Comparing Graphite & Graphene	Compare the structures of graphite and graphene. Explain the properties of graphite and graphene in terms of their structures.
	5.2.3.3		CH2.48	Structure & Properties of Fullerenes	Describe the structure of fullerenes and give their properties.
	5.2.3.3		CH2.49	Explaining the Properties of Fullerenes	Explain the properties of fullerenes in terms of their structure.
	5.2.3		CH2.50	Carbon Allotropes: A Summary	Compare the structures of diamond, graphite, graphene, buckminsterfullerene & nanotubes. Explain and compare their properties in terms of their structures.
	5.2.1.4	Diagnostic: Covalent Bonding	CH2.24	Covalent Bonding I	Identify and describe the formation of covalent bonds using dot and cross diagrams. This nugget contains elemental molecules and the formation of single, double and triple bonds.
	5.2.1.4		CH2.25	Covalent Bonding II	Identify and describe the formation of covalent bonds using dot and cross diagrams. This nugget contains the formation of simple compounds.
	5.2.1.4		CH2.26	Representing Covalent Bonds	Identify covalent compounds from 2D or 3D representations. Describe the structure of a covalent structure using a diagram.
	5.2.1.4		CH2.27	Limitations of Representations of Covalent Bonds	Describe the limitations of 2D or 3D representations of covalent compounds.
	Supplementary		CH2.28	Deducing Formulae from Diagrams of Covalent Compounds	Use diagrams to determine the formulae and empirical formulae of covalent compounds.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Bonding, Structure and Properties of Matter	5.2.2.1 / 5.2.2.2	Diagnostic: Covalent Bonding	PH3.01	Fundamental States of Matter: Characteristics	Identify the four fundamental states of matter and their basic properties.
	Supplementary		PH3.03	Density	Identify the meaning of density and comparing the density of different objects.
	Supplementary		PH3.04	Density of Fundamental States of Matter	Describe density and make comparisons using the particle model.
	Supplementary		PH3.20	Phase Transitions	Describe phase transition between the different fundamental states of matter.
	5.2.2.1		PH3.21	Phase Transitions: Particle Model	Describe the phase transition between the different fundamental states of matter using the particle model.
	Supplementary		PH3.22	Evaporation vs Boiling	Describe and compare the different forms of vaporisation that can occur.
	Supplementary		PH3.23	Physical vs Chemical Changes: The Particle Model	Identify the difference between chemical and physical changes.
	5.2.2.1		PH3.02	Fundamental States of Matter: Particle Model	Describe the arrangement, movement and the relative energy of particles in the fundamental states of matter using the particle model.
	5.2.2.1		PH3.24	Phase Transitions: Melting & Boiling Points	Predict the physical state of a substance under specified conditions, given suitable data.
	Supplementary	Diagnostic: Identifying Bonding, Deducing Properties & Writing Equations	CH2.61	What is a Crystal?	Describe crystalline structures and give examples of ionic and covalent crystals.
	Supplementary		CH2.51	Molecular Compounds vs Ionic Compounds	Compare covalent and ionic compounds. Define the term molecule.
	Supplementary		CH2.52	Identifying Bonding from Substance Names	Identify metallic, ionic and covalent bonding from the elements involved.
	Supplementary		CH2.53	Identifying Bonding from Diagrams	Identify metallic, ionic and covalent bonding from 2D or 3D representations.
	5.2		CH2.54	Summary: Structures & Properties of Substances	A summary of the properties of substances, covering the common themes.
	5.2		CH2.55	Summary: Explaining the Properties of Substances	A summary of the properties of substances, covering the explanations of common themes.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Bonding, Structure and Properties of Matter	Supplementary	Diagnostic: Identifying Bonding, Deducing Properties & Writing Equations	CH2.57	Valency & Number of Covalent Bonds Formed	Deduce the valency of atoms and use it to predict the structure of molecules.
	5.1.1.1		CH2.58	Writing Balanced Formula Equations I	Use knowledge of bonding to determine the formulae of compounds and write balanced formula equations. 1:1 ratio.
	5.1.1.1		CH2.59	Writing Balanced Formula Equations II	Use knowledge of bonding to determine the formulae of compounds and write balanced formula equations. No brackets.
	5.2.1.2	Diagnostic: Ionic Substances	CH2.10	Ionic Bonding I	Identify and describe the formation of ionic bonds using dot and cross diagrams. This nugget contains 1:1 ratio examples only.
	5.2.1.2		CH2.11	Ionic Bonding II	Identify and describe the formation of ionic bonds using dot and cross diagrams. This nugget contains 1:2 and 2:1 ratio examples.
	5.2.1.2		CH2.12	Predicting Formulae from Ions I	Use the known charges of common ions tp predict the formulae of ionic compounds.
	5.2.1.3		CH2.18	Ionic Compounds	Describe the structure of ionic compounds.
	5.2.1.2		CH2.19	Representing Ionic Compounds	Identify ionic compounds from 2D or 3D representations. Describe the structure of an ionic compound using a diagram.
	5.2.1.3		CH2.20	Limitations of Representations of Ionic Compounds	Describe the limitations of 2D or 2D representations of ionic compounds.
	5.2.2.3		CH2.21	Properties of Ionic Compounds	State the properties of ionic compounds.
	5.2.2.3		CH2.22	Explaining the Properties of Ionic Compounds	Explain the properties of ionic compounds in terms of their structure.
	5.2.1.3		CH2.23	Deducing Formulae from Diagrams of Ionic Compounds	Use diagrams and knowledge of ions to determine the formulae of ionic compounds.
	5.2.2.6	Diagnostic: Silicon Dioxide & Polymers	CH2.35	Structure & Properties of Silicon Dioxide	Describe the structure of silicon dioxide and give its properties.
	5.2.2.6		CH2.36	Explaining the Properties of Silicon Dioxide	Explain the properties of silicon dioxide in terms of its structure. Assumes knowledge of small molecular substances.
	5.2.2.5		CH2.37	Structure & Properties of Polymers	Describe the structure of polymers and give their general properties.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Bonding, Structure and Properties of Matter	5.2.2.5	Diagnostic: Silicon Dioxide & Polymers	CH2.38	Explaining the Properties of Polymers	Explain the general properties of polymers in terms of their structure.
	5.2.1.4		CH2.39	Representing Polymers	Describe the displayed formula of monomers and interpret to deduce the structure of a polymer.
	Supplementary	Diagnostic: Small & Giant Covalent Substances	CH2.29	Intermolecular & Intramolecular Forces	Define inter- and intramolecular forces and compare them.
	5.2.1.4		CH2.30	Small Molecular Substances	Describe the structure of small molecular substances and give some common examples.
	5.2.2.4		CH2.31	Properties of Small Molecular Substances	Give the properties of small molecular substances.
	5.2.2.4		CH2.32	Explaining the Properties of Small Molecular Substances	Explain the properties of small molecular substances in terms of their structure.
	5.2.2.6		CH2.33	Giant Covalent Structures & Their Properties	Describe the structure of giant covalent structures and give their general properties.
	5.2.1.4/5.2.2.6		CH2.34	Comparing Small & Giant Covalent Substances	Compare the structure and properties of small and giant covalent substances.
	Topic Review	-	CH2.67	Topic 2 Review: Bonding, Structure & Properties - Set A	Chemistry Topic 2 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	CH2.68	Topic 2 Review: Bonding, Structure & Properties - Set B	Chemistry Topic 2 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 3: Quantitative Chemistry	5.3.2.5	Diagnostic: Concentration Calculations (g/dm^3)	CH3.34	Concentration of Solutions	Describe the use of the (aq) state symbol in relation to concentration.
	5.3.2.5		CH3.35	Calculating Concentration I (g/dm^3)	Calculate the concentration of solutions in g/dm^3. Unit conversions are not required.
	5.3.2.5		CH3.36	Calculating Concentration II (g/dm^3)	Calculate the concentration of solutions in g/dm^3. Unit conversions are required.
	5.3.2.5		CH3.37	Rearranging the Concentration Equation (g/dm^3)	Rearrange the concentration equation to calculate the mass and volume of solutions. Includes application questions and requires unit conversions.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 3: Quantitative Chemistry	5.3.1.2	Diagnostic: Percentage Mass Calculations	CH3.10	Calculating Percentage Mass I	Calculate the percentage mass of compounds with simple 1:1 ratios. Atomic masses are given in the questions.
	5.3.1.2		CH3.11	Calculating Percentage Mass II	Calculate the percentage mass of compounds without brackets. Atomic masses are given in the questions.
	5.3.1.2		CH3.12	Calculating Percentage Mass III	Calculate the percentage mass of compounds without brackets. Atomic masses need to be read from a periodic table.
	5.3.1.2		CH3.13	Calculating Percentage Mass IV	Calculate the percentage mass of compounds with brackets. Atomic masses need to be read from a periodic table.
	5.3.1.2	Diagnostic: Percentage Mass Calculations	CH3.01	Calculating Relative Formula Mass I	Calculate the relative formula mass of compounds with simple 1:1 ratios. Atomic masses are given in the questions.
	5.3.1.2		CH3.02	Calculating Relative Formula Mass II	Calculate the relative formula mass of compounds without brackets. Atomic masses are given in the questions.
	5.3.1.2		CH3.03	Calculating Relative Formula Mass III	Calculate the relative formula mass of compounds without brackets. Atomic masses need to be read from a periodic table.
	5.3.1.2		CH3.04	Calculating Relative Formula Mass IV	Calculate the relative formula mass of compounds with brackets. Atomic masses need to be read from a periodic table.
	5.3.1.1		CH3.05	Conservation of Mass	Describe the concept of conservation of mass using the masses of reactants and products. No requirement for student to balance equations.
	5.3.1.2		CH3.06	Using Equations to Sum Relative Formula Masses I	Calculating the sums of relative formula masses for reactants or products from symbol equations. Equations do not require balancing before calculation.
	5.3.1.2		CH3.07	Using Equations to Sum Relative Formula Masses II	Calculating the sums of relative formula masses for reactants or products from symbol equations. Equations require balancing before calculation.
	5.3.1.3		CH3.09	Explaining Observed Mass Changes	Explain the observed mass changes in experiments according to the conservation of mass.
	5.3.1.4	Diagnostic: Uncertainty of Repeated Measurements	CH3.15	Uncertainty of Repeated Measurements	Identify how to represent the distribution of results with uncertainty around the mean.
	5.3.1.4		CH3.16	Calculating Uncertainty of Repeated Measurements	Calculate the distribution of results with uncertainty around the mean.
	5.3.1.4		CH3.17	Interpreting Uncertainty of Repeated Measurements	Interpret from graphs the distribution of results with uncertainty around the mean.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 3: Quantitative Chemistry	Topic Review	-	CH3.59	Topic 3 Review: Quantitative Chemistry - Set A	Chemistry Topic 3 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	CH3.60	Topic 3 Review: Quantitative Chemistry - Set B	Chemistry Topic 3 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 4: Chemical Changes	Prior	Diagnostic: Acids, Bases & Alkalis	CH4.019	Acids & Bases	Describe acids and bases using laboratory and everyday examples.
	Prior		CH4.020	Alkalis	Explain the general properties of alkalis and give examples.
	Prior		CH4.021	pH Scale	Recall that relative acidity and alkalinity are measured by pH, using the pH scale.
	5.4.2.1		CH4.022	Acids & Metals: Word Equations	Write and extract information from word equations between acids and metals.
	5.4.2.1		CH4.023	Acids & Metals: Symbol Equations	Write and extract information from symbol equations between acids and metals.
	5.4.2.4		CH4.025	Acids & Alkalis in Aqueous Solutions	Describe how acids and alkalis release hydrogen and hydroxide ions in aqueous solutions.
	4.4.2.4		CH4.026	Indicators: Universal Indicator	Describe how universal indicator can be used to estimate the pH of a solution.
	Supplementary		CH4.030	Indicators: Litmus	Describe how litmus can be used to indicate the pH of a solution.
	4.4.2.4		CH4.033	pH Meters	Describe how a pH meter can be used to accurately measure the pH of a solution.
	5.4.3.1	Diagnostic: Electrolysis	CH4.072	Electrolysis	Introduction to electrolysis, describing how ionic compounds when molten or in an aqueous solution go through the process of decomposition, by the passage of an electric current.
	5.4.3.1		CH4.073	The Process of Electrolysis	Describing the transfer of charge during electrolysis, through the movement of ions in the electrolyte.
	5.4.3.2		CH4.078	Electrolysis of Molten Lead (II) Bromide	Describing the decomposition of Lead (II) Bromide through the process of electrolysis.
	5.4.3.2		CH4.080	Predicting Products of Electrolysis of Molten Ionic Compounds	Describing how to predict the products of the electrolysis in the molten state.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 4: Chemical Changes	5.4.3.4	Diagnostic: Electrolysis	CH4.082	Electrolysis of Concentrated Aqueous Sodium Chloride	Description of electrolysis of concentrated aqueous sodium chloride and the products formed.
	5.4.3.4		CH4.084	Electrolysis of Aqueous Copper (II) Sulfate	Description of electrolysis of aqueous copper (II) sulfate and the products formed.
	5.4.3.4		CH4.086	Electrolysis of Dilute Sulfuric Acid	Description of electrolysis of dilute sulfuric acid and the products formed.
	5.4.3.1		CH4.088	Electrolysis of Aqueous Copper (II) Chloride	Description of electrolysis of aqueous copper (II) chloride and the products formed.
	5.4.3.4		CH4.090	Predicting Products of the Electrolysis of Aqueous Solutions	Description of how to predict the products of electrolysis in aqueous solutions.
	5.4.3.4 & 5.4.3.2		CH4.092	Predicting Products of Electrolysis: Summary	A summary to describe how to predict the products of electrolysis.
	RP9		CH4.096	Required Practical 9: Electrolysis	Required Practical - Investigation into the products formed during the electrolysis of aqueous solutions.
	RP9		CH4.098	Required Practical 9: Electrolysis Analysis & Conclusion	Required Practical - Analysis & conclusion for the investigation into products formed during the electrolysis of aqueous solutions.
	5.4.3.3		CH4.099	Extracting Metals by Electrolysis	Extracting metals from their ores using electrolysis using aluminium as an example.
	5.4.3.3		CH4.101	Evaluating Extracting Metals	Evaluating the methods used to extract metals from their ores.
	5.4.2.2	Diagnostic: Neutralisation	CH4.038	Neutralisation	Describe neutralisation as an acid reacting with a base or alkali to form salt plus water. Recognise that aqueous neutralisation reactions can be generalised to hydrogen ions reacting with hydroxide ions to form water.
	5.4.2.4		CH4.040	Neutralisation & pH	Recall that relative acidity and alkalinity are measured by pH and explain how pH is associated with neutralisation.
	5.4.2.2		CH4.041	Neutralisation - Acids & Metal Oxides: Word Equations	Write and extract information from word equations between acids and metal oxides.
	5.4.2.2		CH4.042	Neutralisation - Acids & Metal Oxides: Symbol Equations	Write and extract information from symbol equations between acids and metal oxides.
	5.4.2.2		CH4.043	Neutralisation - Acids & Metal Hydroxides: Word Equations	Write and extract information from word equations between acids and metal hydroxides.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 4: Chemical Changes	5.4.2.2	Diagnostic: Neutralisation	CH4.044	Neutralisation - Acids & Metal Hydroxides: Symbol Equations	Write and extract information from symbol equations between acids and metal hydroxides.
	5.4.2.2		CH4.045	Neutralisation - Acids & Metal Carbonates: Word Equations	Write and extract information from word equations between acids and metal carbonates.
	5.4.2.2		CH4.046	Neutralisation - Acids & Metal Carbonates: Symbol Equations	Write and extract information from symbol equations between acids and metal carbonates.
	5.4.2.2		CH4.047	Summary: Acids, Metals & Metal Compounds Word Equations	A summary of the reactions between acids, metals and metal compounds including word equations.
	5.4.2.2		CH4.048	Summary: Acids, Metals & Metal Compounds Symbol Equations	A summary of the reactions between acids, metals and metal compounds including symbol equations.
	5.4.1.1	Diagnostic: Oxidation & Reduction	CH4.001	Metals & Oxygen: Word Equations	Write and extract information from word equations for the reaction between metals and oxygen.
	5.4.1.1		CH4.002	Metals & Oxygen: Symbol Equations	Write and extract information from symbol equations for the reaction between metals and oxygen.
	5.4.1.1		CH4.003	Oxidation & Reduction: Oxygen	Explain oxidation and reduction in terms of loss or gain of oxygen.
	5.4.1.1		CH4.004	Oxidising & Reducing Agents: Oxygen	Identify oxidising and reducing agents in oxidation and reduction reactions.
	5.4.1.2	Diagnostic: Reactivity Series	CH4.012	Reactivity Series	Explain the reactivity of metals based on their reactions with water and dilute acids.
	5.4.1.2		CH4.013	Reactivity Series & Forming Ions	Explain how the reactivity of metals with water and dilute acids is related to the tendency of the metal to form its positive ion.
	5.4.1.2		CH4.014	Deducing the Order of Reactivity	Deduce an order of reactivity of metals based on experimental results.
	5.4.1.2		CH4.015	Displacement Reactions: Word Equations	Write and extract information from word equations for displacement reactions.
	5.4.1.2		CH4.016	Displacement Reactions: Symbol Equations	Write and extract information from symbol equations for displacement reactions.
	5.4.1.3		CH4.018	Extraction of Metals by Reduction	Explain, using the position of carbon in the reactivity series, the principles of processes used to extract metals, including extraction of a non-ferrous metal.

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Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 4: Chemical Changes	Supplementary	Diagnostic: Solubility	CH4.049	Solubility Rules: Alkali Metals & Ammonium Ion	Solubility rule for compounds containing either an alkali metal or an ammonium ion.
	Supplementary		CH4.050	Solubility Rules: Nitrates	Solubility rule for compounds containing a nitrate ion.
	Supplementary		CH4.051	Solubility Rules: Sulfates	Solubility rule for compounds containing a sulfate ion.
	Supplementary		CH4.052	Solubility Rules: Halides	Solubility rule for compounds containing a halide ion.
	Supplementary		CH4.053	Solubility Rules: Carbonates & Phosphates	Solubility rule for compounds containing either a carbonate or phosphate ion.
	Supplementary		CH4.054	Solubility Rules: Hydroxides	Solubility rule for compounds containing a hydroxide ion.
	Supplementary		CH4.055	Solubility Rules: Sulfides	Solubility rule for compounds containing a sulfide ion.
	Supplementary		CH4.057	Solubility Rules: Summary	A summary of the solubility rules for compounds containing a variety of different ions.
	5.4.2.3		CH4.059	Soluble Salts	Explanation of producing soluble salts from a variety of acid reactions.
	RP8		CH4.061	Required Practical 8: Making Soluble Salts from an Insoluble Oxide	Required Practical - Preparation of a salt from the reaction between an acid & metal oxide.
	RP8		CH4.063	Required Practical 8: Making Soluble Salts from an Insoluble Carbonate	Required Practical - Preparation of a salt from the reaction between an acid & metal carbonate.
	Supplementary		CH4.064	Practical: Producing Insoluble Salts	Practical - Preparation of a pure, dry, insoluble salt from the reaction between two salt solutions.
	Topic Review	-	CH4.103	Topic 4 Review: Chemical Changes - Set A	Chemistry Topic 4 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	CH4.104	Topic 4 Review: Chemical Changes - Set B	Chemistry Topic 4 Review for Combined Science AQA Trilogy Foundation Tier.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 5: Energy Changes	5.5.1.1	Diagnostic: Endothermic Reactions	CH5.10	Endothermic Reactions: Introduction	Describe endothermic reactions and use the law of conservation of energy to explain why the product molecules must have more energy than the reactants.
	5.5.1.2		CH5.11	Endothermic Reactions: Profiles	Label endothermic reaction profiles and extract information from them.
	5.5.1.2		CH5.12	Endothermic Reactions: Thermal Decomposition	Describe thermal decomposition as an example of an endothermic chemical reaction.
	5.5.1.2		CH5.13	Endothermic Reactions: Photosynthesis	Describe photosynthesis as the endothermic chemical process. Includes the word & symbol equation.
	5.5.1.2		CH5.14	Endothermic Reactions: Citric Acid & Sodium Hydrogen Carbonate	Describe the reaction between citric acid and sodium hydrogen carbonate as an example of an endothermic reaction.
	5.5.1.2		CH5.15	Endothermic Reactions: Sports Injury Packs	Describe self-cooling sports injury packs as an example of an every day use of endothermic reactions.
	5.5.1.2		CH5.16	Endothermic Reactions: Summary	Define endothermic reactions and use reaction profiles. Give photosynthesis, thermal decomposition, citric acid and sodium hydrogencarbonate and sports injury packs as examples.
	5.5.1.2	Diagnostic: Exothermic Reactions	CH5.01	Collision Theory	Describe collision theory and define activation energy.
	5.5.1.1		CH5.02	Exothermic Reactions: Introduction	Describe exothermic reactions and use the law of conservation of energy to explain why the product molecules must have less energy than the reactants.
	5.5.1.2		CH5.03	Exothermic Reactions: Profiles	Label exothermic reaction profiles and extract information from them.
	5.5.1.2		CH5.04	Exothermic Reactions: Combustion	Describe combustion as an exothermic oxidation reaction. Give the basic word equation for the complete and incomplete combustion of fuel.
	5.5.1.2		CH5.05	Exothermic Reactions: Displacement	Describe displacement as typically exothermic. Extract information from word & symbol equations for displacement reactions.
	5.5.1.2		CH5.06	Exothermic Reactions: Respiration	Describe respiration as an exothermic chemical process. Includes equations for aerobic & anaerobic respiration.
	5.5.1.2		CH5.07	Exothermic Reactions: Neutralisation	Describe neutralisation as an example of an exothermic reaction.
	5.5.1.2		CH5.08	Exothermic Reactions: Self-heating Devices	Give heat packs, hand warmers and self-heating food/drink packaging as examples of everyday uses of exothermic reactions.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 5: Energy Changes	5.5.1.2	Diagnostic: Exothermic Reactions	CH5.09	Exothermic Reactions: Summary	Define exothermic reactions and use reaction profiles. Give combustion, displacement, respiration, neutralisation and self-heating devices as examples.
	5.5.1.2		CH5.01	Collision Theory	Describe collision theory and define activation energy.
	5.5.1.1	Diagnostic: Exothermic Reactions	CH5.17	Exothermic & Endothermic Reactions: Identifying	Identify exothermic and endothermic reactions based on reaction profiles and/or the temperature change of the surroundings.
	5.5.1.1		CH5.18	Exothermic & Endothermic Reactions: Drawing Reaction Profiles	Identify correctly drawn reaction profiles showing the relative energies and energy changes.
	5.5.1.2		CH5.19	Exothermic & Endothermic Reactions: Evaluating Uses	Evaluate the use of exothermic and endothermic reactions for a specific purpose, considering temperature change, environmental impact and the toxicity of chemicals.
	5.5.1./5.5.1.2		CH5.20	Exothermic & Endothermic Reactions: Summary	Identify exothermic and endothermic reactions, giving examples of both.
	RP10		CH5.25	Required Practical 10: Temperature Change - Hydrochloric Acid & Metals	Investigate the variables which affect temperature change in a chemical reaction between an acid and metal.
	RP10		CH5.26	Required Practical 10: Temperature Change - Acid & Metal Carbonate	Investigate the variables which affect temperature change in a chemical reaction between hydrochloric acid and sodium hydrogen carbonate.
	RP10		CH5.27	Required Practical 10: Temperature Change - Acid & Alkali	Investigate the variables which affect temperature change in a chemical reaction between an acid and alkali.
	RP10		CH5.28	Required Practical 10: Temperature Change - Magnesium & Copper (II) Sulfate	Investigate the variables which affect temperature change in a chemical reaction between copper (II) sulfate and magnesium.
	Topic Review	-	CH5.46	Topic 5 Review: Energy Changes - Set A	Chemistry Topic 5 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	CH5.47	Topic 5 Review: Energy Changes - Set B	Chemistry Topic 5 Review for Combined Science AQA Trilogy Foundation Tier.
	Paper Review	-	CH5.54	Paper Review 1: Chemistry - Set A	Chemistry Paper 1 Review for Combined Science AQA Trilogy Foundation Tier.
	Paper Review	-	CH5.55	Paper Review 1: Chemistry - Set B	Chemistry Paper 1 Review for Combined Science AQA Trilogy Foundation Tier.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 6: The Rate and Extent of Chemical Change	5.6.1.3	Diagnostic: Explain & Interpret Data	CH6.21	Rate of Reaction: Explaining Effect of Concentration	Explaining the effect of concentration on the rate of reaction, using collision theory.
	5.6.1.3		CH6.22	Rate of Reaction: Explaining Effect of Pressure	Explaining the effect of pressure on the rate of reaction, using collision theory.
	5.6.1.3		CH6.23	Rate of Reaction: Explaining Effect of Surface Area	Explaining the effect of surface area on the rate of reaction, using collision theory.
	5.6.1.3		CH6.24	Rate of Reaction: Explaining Effect of Temperature	Explaining the effect of temperature on the rate of reaction, using collision theory.
	5.6.1.3		CH6.25	Rate of Reaction: Explaining Effect of Catalysts	Explaining the effect of adding a catalyst on the rate of reaction, using collision theory.
	5.6.1.3		CH6.26	Rate of Reaction: Summary of Explaining Effects	A summary for explaining the effect of concentration, pressure, surface area, temperature and adding catalysts, on the rate of reaction, using collision theory.
	5.6.1.3		CH6.27	Rate of Reaction: Interpreting Data	Interpreting data from tables and graphs obtained during rate of reaction experiments; interpret when a reaction is complete and adding sketches to a graph when conditions are changed.
	5.6	Diagnostic: Introduction to Rates	CH6.01	Rate of Reaction: Introduction	An introduction to what is meant by rate of reaction and common methods for measuring it.
	6.3.3.1		PH3.39	Particle Motion in Gases	State that the particles of a gas are in constant random motion and that increasing temperature of the gas increases the average kinetic energy of the particles.
	6.3.3.1		PH3.41	Gas Pressure	Explain how the collision of gas particles with an object exerts a force on that object.
	Prior knowledge		PH1.37	Thermal Energy & Temperature	Identify the difference between thermal energy and temperature.
	5.6.1.2		CH6.02	Introduction to Catalysts	An introduction to what is meant by the term catalyst and everyday examples of catalysts. The key features of catalysts are also outlined.
	Supplementary		BI1.45	Surface Area to Volume Ratio	Calculate and compare surface area to volume ratios.
	5.6.1.2	Diagnostic: Rates Experiments	CH6.12	Practical: Rate of Reaction: Surface Area (Changing Mass)	Practical to investigate the effect of surface area on the rate of reaction between calcium carbonate (marble) and hydrochloric acid. This practical uses a change in mass to measure the rate of reaction.
	5.6.1.4		CH6.13	Practical: Rate of Reaction: Catalysts (Hydrogen Peroxide)	Practical to investigate the effect of a catalyst on the rate of reaction for the decomposition of hydrogen peroxide This practical uses gas collection in a gas syringe as a measure of the rate of reaction.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 6: The Rate and Extent of Chemical Change	supplementary	Diagnostic: Rates Experiments	CH6.14	Practical: Rate of Reaction: Catalysts (Zinc & Sulfuric Acid)	Practical to investigate the effect of a catalyst on the rate of reaction for zinc reacting with sulfuric acid. This practical uses time taken to collect a set volume of gas as a measure of the rate of reaction.
	5.6.1.2		CH6.15	Practical: Rate of Reaction: Temperature (Disappearing Cross)	Practical to investigate the effect of temperature on the rate of reaction for the reaction between sodium thiosulfate and hydrochloric acid. This practical uses the time taken for a cross to disappear as a measure of the rate of reaction.
	supplementary		CH6.16	Practical: Rate of Reaction: Temperature (Magnesium & Hydrochloric Acid)	Practical to investigate the effect of temperature on the rate of reaction for the reaction between magnesium and hydrochloric acid. This practical uses the time taken for the magnesium to disappear as a measure of the rate of reaction.
	RP11		CH6.17	Required Practical 11: Rate of Reaction: Concentration (Gas Collection)	Practical to investigate the effect of concentration on the rate of reaction for the reaction between magnesium and hydrochloric acid. This practical uses the volume of gas collected every 10 seconds by water displacement, as a measure of the rate of reaction.
	RP11		CH6.18	Required Practical 11: Rate of Reaction: Concentration (Disappearing Cross)	Required practical to investigate the effect of concentration on the rate of reaction for the reaction between sodium thiosulfate and hydrochloric acid. This practical uses the time taken for a cross to disappear as a measure of the rate of reaction.
	5.6.2.1	Diagnostic: Reversible Reactions & Equilibrium	CH6.28	Reversible Reactions	Explaining reversible reactions and examples of reversible reactions.
	5.6.2.1		CH6.29	Changing Conditions & Reversible Reactions	Explain the effect of changing the conditions in a reversible reaction.
	5.6.2.2		CH6.30	Energy Changes & Reversible Reactions	Explain the energy changes of the forward and reverse reaction in a reversible reaction.
	5.6.2.3		CH6.31	Equilibrium	Defining equilibrium and the conditions required for equilibrium to be reached.
	5.6.1.1	Diagnostic: Using Data	CH6.03	Rate of Reaction: Calculating I	Calculating the rate of reaction in g/s and cm¬≥/s. Word problems and no unit conversions.
	5.6.1.1		CH6.04	Rate of Reaction: Calculating II	Calculating rate of reaction using information from tables and graphs. No unit conversion is needed and units of rate are only g/s, cm3/s and per second.
	5.6.1.1		CH6.05	Rate of Reaction: Calculating III	Review of calculating rate of reaction using information from tables and graphs. Comparison of rates of reaction using tangents. The tangents are given. No unit conversion is needed and units of rate are only g/s, cm3/s and per second.
	5.6.1.1		CH6.10	Rate of Reaction: Factors Affecting Rate	Review from Key Stage 3 of the five factors that can affect the rate of reaction.
	5.6.1.2		CH6.11	Rate of Reaction: Describing Data	How to describe data in tables and graphs obtained during rate of reaction experiments. In addition, how describe graphs with multiple lines is included.
	Topic Review	-	CH6.40	Topic 6 Review: Rate & Extent of Chemical Change - Set A	Chemistry Topic 6 Review for Combined Science AQA Trilogy & GCSE Chemistry Foundation Tier.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 6	Topic Review	-	CH6.41	Topic 6 Review: Rate & Extent of Chemical Change - Set B	Chemistry Topic 6 Review for Combined Science AQA Trilogy & GCSE Chemistry Foundation Tier.
Topic 7: Organic Chemistry	5.7.1.1	Diagnostic: Alkenes	CH7.01	Crude Oil	Explain how crude oil is formed.
	5.7.1.3		CH7.02	Properties of Hydrocarbons	Describe the properties of hydrocarbons.
	5.7.1.2		CH7.03	Fractional Distillation of Crude Oil	Explain how crude oil can be separated into useful products using fractional distillation.
	5.7.1.2		CH7.04	Petrochemicals	Describe the uses of different petrochemicals.
	5.7.1.1		CH7.05	Alkanes	Describe the homologous series; alkanes.
	5.7.1.1		CH7.06	Naming Alkanes	Identify the names of the first four alkanes.
	5.7.1.1		CH7.07	Structure & Formulae of Alkanes I	Identify the formula of the first four alkanes.
	5.7.1.1		CH7.08	Structure & Formulae of Alkanes II	Label and draw the structural formula of the first four alkanes.
	5.7.1.3		CH7.09	Complete Combustion of Hydrocarbons	Describe the complete combustion of hydrocarbons.
	5.7.1.4		CH7.11	Alkenes	Describe the homologous series; alkenes.
	5.7.1.4		CH7.19	Alkenes vs Alkanes	Describe the differences between alkenes and alkanes.
	5.7.1.4		CH7.18	Cracking	Explain how and why long chain hydrocarbons are changed into shorter chain hydrocarbons.
	Topic Review	-	CH7.47	Topic 7 Review: Organic Chemistry - Set A	Chemistry Topic 7 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	CH7.48	Topic 7 Review: Organic Chemistry - Set B	Chemistry Topic 7 Review for Combined Science AQA Trilogy Foundation Tier.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 8: Chemical Analysis	5.8.1.1	Diagnostic: Identifying Pure Substances	CH8.01	Identifying Pure Substances I	Use melting/boiling point data to identify pure and impure substances. Includes tables.
	6.3.2.3		PH3.31	Specific Latent Heat	Describe the specific latent heat of a material. Identify the difference between the latent heat of fusion and the latent heat of vaporisation.
	6.3.2.3		PH3.32	Heating & Cooling Graphs I	Interpret heating and cooling graphs showing a change of state. Graphs remain within the same graph quadrant.
	6.3.2.3		PH3.33	Heating & Cooling Graphs II	Interpret heating and cooling graphs showing a change of state. Graphs include negative numbers and span two graph quadrants.
	5.8.1.1		CH8.02	Identifying Pure Substances II	Use melting/boiling point data to identify pure and impure substances. Includes tables & graphs.
	5.8.1.2	Diagnostic: Paper Chromatography	CH8.05	Formulations	Define formulation and give fuels, cleaning agents, paints, medicines, alloys, fertilisers and foods as examples.
	5.8.1.2		CH8.06	Paper Chromatography	Explain how paper chromatography can be used to separate mixtures of liquids (often coloured) that are soluble in the same solvent.
	5.8.1.3		CH8.07	Paper Chromatography: Rf Values	Describe the use of Rf values in paper chromatography.
	5.8.1.3		CH8.08	Paper Chromatography: Calculating Rf Values	Calculate Rf values from a paper chromatogram.
	5.8.1.3		CH8.09	Paper Chromatography: Interpretation	Interpret the results from paper chromatography. Use paper chromatography to differentiate between pure substances and mixtures and identify known and unknown substances.
	RP 12		CH8.10	Required Practical 12: Paper Chromatography	Required Practical - Investigate how paper chromatography can be used to separate a mixture and identify known substances using Rf values.
	5.8.2.1	Diagnostic: Testing for Gases	CH8.12	Testing for Gases: Hydrogen	Describe how to test for the presence of hydrogen gas.
	5.8.2.2		CH8.13	Testing for Gases: Oxygen	Describe how to test for the presence of oxygen gas.
	5.8.2.3		CH8.14	Testing for Gases: Carbon Dioxide	Describe how to test for the presence of carbon dioxide gas.
	5.8.2.4		CH8.15	Testing for Gases: Chlorine	Describe how to test for the presence of chlorine gas.
	5.8.2		CH8.16	Testing for Gases: Summary	Describe how to test for the presence of carbon dioxide, chlorine, oxygen and hydrogen gas.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 8	Topic Review	-	CH8.30	Topic 8 Review: Chemical Analysis - Set A	Chemistry Topic 8 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	CH8.31	Topic 8 Review: Chemical Analysis - Set B	Chemistry Topic 8 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 9: Chemistry of the Atmosphere	5.9.3.1	Diagnostic: Air Pollution	CH9.08	Air Pollution from Fuels	Describe air pollution and pollutants from the combustion of fuels.
	5.9.3.1/5.9.3.2		CH9.09	Pollutants: Carbon Dioxide	Explain the formation and impact of carbon dioxide as a pollutant.
	5.9.3.1/5.9.3.2		CH9.10	Pollutants: Sulfur Dioxide	Explain the formation and impact of sulfur dioxide as a pollutant.
	5.9.3.1/5.9.2.4		CH9.11	Pollutants: Nitrogen Oxides	Explain the formation and impact of nitrogen oxides as pollutants.
	5.9.3.1/5.9.2.5		CH9.12	Pollutants: Particulates	Explain the formation and impact of particulates as pollutants.
	5.9.3.1/5.9.2.6		CH9.13	Pollutants: Carbon Monoxide	Explain the formation and impact of carbon monoxide as a pollutant.
	5.9.2.2		CH9.14	Pollutants: Methane	Explain the formation and impact of methane as a pollutant.
	5.9.2.2/5.9.3.1/ 5.9.2.6		CH9.15	Pollutants: Summary	Identify all types of pollutants and describe their formation and impacts. Includes: carbon dioxide, sulfur dioxide, nitrogen oxides, particulates, carbon monoxide and methane.
	5.9.2.1	Diagnostic: Climate Change	CH9.06	Climate Change: Natural Greenhouse Effect	Identify what the greenhouse effect is and describe how it impacts upon our planet.
	5.9.2.3		CH9.16	Climate Change: Natural Factors	Identify natural occurrences which can affect climate change.
	5.9.2.3		CH9.17	Climate Change: Historic Changes in Climate	Describe the historical changes in temperature, their causes and the impacts of these changes.
	5.9.2.2		CH9.18	Climate Change: Human Factors	Describe the anthropogenic (human) causes of climate change.
	5.9.2.2		CH9.19	Climate Change: Since Industrialisation	Describe the impact of the industrial revolution on climate change.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 9: Chemistry of the Atmosphere	5.9.2.2	Diagnostic: Climate Change	CH9.20	Climate Change: Enhanced Greenhouse Effect	Identify and describe what the enhanced greenhouse effect is.
	5.9.2.2/5.9.2.3		CH9.21	Climate Change: Enhanced Greenhouse Effect Impacts	Describe how the enhanced greenhouse effect impacts our planet.
	5.9.2.2		CH9.22	Climate Change: Peer Review	Explain what peer review is and why it is important for scientific research.
	5.9.1.4/5.9.2.4	Diagnostic: Climate Change Mitigation & Adaptation	CH9.23	Climate Change Mitigation: Carbon Capture & Storage	Describe what carbon capture is and how it works.
	5.9.2.4		CH9.24	Climate Change Mitigation: Renewable Energy	Explain how renewable energies can help to reduce climate change.
	5.9.2.4		CH9.25	Climate Change Mitigation: Afforestation	Explain how afforestation can help to reduce climate change.
	5.9.2.4		CH9.26	Climate Change Mitigation: International Agreements	Identify how different countries have worked together to help tackle climate change.
	5.9.2.4		CH9.27	Climate Change Mitigation: Summary	Describe mitigation strategies for to help tackle climate change. Strategies included: carbon capture & storage, renewable energy, afforestation and international agreements.
	5.9.2.4		CH9.28	Climate Change Adaptation: Carbon Footprints	Identify what a carbon footprint is and who is responsible for managing them.
	5.9.1.1	Diagnostic: The Earth's Atmosphere	CH9.01	The Earth's Atmosphere	Identify the composition of gases in the Earth's atmosphere.
	5.9.1.2		CH9.02	The Earth's Early Atmosphere	Describe theories of how the Earth's atmosphere was formed and its composition.
	5.9.1.3		CH9.03	How Oxygen Levels in the Atmosphere Increased	Explain the changes in oxygen content in the atmosphere.
	5.9.1.4		CH9.04	How Carbon Dioxide Levels in the Atmosphere De-creased	Explain the changes in carbon dioxide content in the atmosphere.
	5.9.1.2/5.9.1.3/ 5.9.1.4		CH9.05	The Evolution of the Earth's Atmosphere	Describe the changes over time in the Earth's atmosphere.
	Topic Review	-	CH9.29	Topic 9 Review: Chemistry of the Atmosphere - Set A	Chemistry Topic 9 Review for Combined Science AQA Trilogy & GCSE Chemistry Foundation Tier.
	Topic Review	-	CH9.30	Topic 9 Review: Chemistry of the Atmosphere - Set B	Chemistry Topic 9 Review for Combined Science AQA Trilogy & GCSE Chemistry Foundation Tier.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 10: Using Resources	5.10.2.1	Diagnostic: Life Cycle Assessments	CH10.21	LCA: Life Cycle Assessments	Identify what a life cycle assessment is and what is included when a life cycle assessment is conducted.
	5.10.2.1		CH10.22	LCA: Evaluating Products Using LCAs	Interpret data from a life cycle assessment for a product.
	5.10.2.2		CH10.23	Reducing the Use of Resources	Understand how reducing, reusing and recycling can extend the lifetime of finite resources.
	5.10.1.1		CH10.24	Sustainable Development	Understand what is meant by sustainable development and how it can be achieved.
	5.10.2.1		CH10.25	LCA: Shopping Bags	Compare the LCAs for plastic and paper bags to evaluate which is more environmentally friendly.
	5.10.1.1	Diagnostic: Properties of Materials	CH10.01	Chemical Properties of Materials	Describe the chemical properties of materials.
	5.10.1.1		CH10.02	Physical Properties of Materials	Describe the physical properties of materials.
	5.10.1.1		CH10.03	Mechanical Properties of Materials	Describe the mechanical properties of materials.
	5.10.1.1	Diagnostic: Using Resources	CH10.04	Using Resources: Introduction	Give examples of the Earth's natural resources and their uses.
	5.10.1.1		CH10.05	Using Resources: Supplementing Natural Resources	Give examples of natural resources that are supplemented by agricultural and synthetic products.
	5.10.1.1		CH10.06	Using Resources: Finite & Renewable Resources	Distinguish between finite and renewable resources.
	5.10.1.1		CH10.07	Using Resources: Describing Data	Extract information about resources from charts, graphs and tables.
	5.10.1.1		CH10.08	Using Resources: Interpreting Data	Interpret information about resources from charts, graphs and tables.
	5.10.1.1		CH10.09	Using Resources: Evaluating Data	Use orders of magnitude to evaluate the significance of data.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 10: Using Resources	5.10.1.2	Diagnostic: Water	CH10.30	Natural Sources of Water	Describe different sources of raw water.
	5.10.1.2		CH10.31	Potable Water	Describe potable water and the differences between potable and pure water.
	5.10.1.2		CH10.32	Potable Water from Freshwater	Describe the treatment process to obtain potable water from freshwater
	5.10.1.2		CH10.33	Potable Water from Seawater	Describe the treatment process to obtain potable water from seawater.
	5.10.1.3		CH10.34	Waste Water Treatment	Identify the sources of waste water and describe how it is treated.
	5.10.1.3		CH10.35	Potable Water from Wastewater	Explain how potable water can be obtained from waste water.
	5.10.1.3		CH10.36	Water: Summary	Identify different water sources and describe the different treatment types to obtain potable water and treat waste.
	RP 13		CH10.38	Required Practical 13: Analysis of Water – pH & Dissolved Solids	Measure the pH and dissolved solids, by evaporation, of a sample of water.
	RP 13		CH10.39	Required Practical 13: Analysis of Water – Purification & BP	Distil water samples and the measuring of the boiling point of the distillate.
	Topic Review	-	CH10.48	Topic 10 Review: Using Resources - Set A	Chemistry Topic 10 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	CH10.49	Topic 10 Review: Using Resources - Set B	Chemistry Topic 10 Review for Combined Science AQA Trilogy Foundation Tier.

Course Content

Science Combined GCSE: AQA Trilogy (F) – Physics

Diagnostics 39 **Strands** 12 **Nuggets** 398

This course is mapped to the physics subject content of AQA GCSE Combined Science: Trilogy Foundation Tier.

AQA: 8464

QAN: 601/8758/X

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	39
Topic Reviews	14
Paper Reviews	2
Topic 1: Energy	69
Topic 2: Electricity	77
Topic 3: Particle Model of Matter	35
Topic 4: Atomic Structure	39
Topic 5a: Forces	41
Topic 5b: Forces & Motion	41
Topic 6: Waves	28
Topic 7: Magnetism & Electromagnetism	6
Maths Skills for Physicists	46

Diagnostics

A diagnostic is a baseline assessment.

Code	Strand
PH0.001	Diagnostic: Energy Stores & Transfers
PH0.003	Diagnostic: Calculating Energy Transfers I
PH0.005	Diagnostic: Calculating Energy Transfers II
PH0.007	Diagnostic: Calculating Energy Transfers III
PH0.011	Diagnostic: Power
PH0.013	Diagnostic: Specific Heat Capacity
PH0.017	Diagnostic: Energy Transfers & Efficiency
PH0.021	Diagnostic: Energy Resources
PH0.023	Diagnostic: Introduction to Electricity
PH0.025	Diagnostic: Electrical Charge
PH0.027	Diagnostic: Potential Difference
PH0.029	Diagnostic: Ohmic & Non-ohmic Conductors
PH0.031	Diagnostic: Series & Parallel Circuits
PH0.035	Diagnostic: Mains Electricity
PH0.038	Diagnostic: Power & Electrical Circuits I
PH0.040	Diagnostic: Power & Electrical Circuits II
PH0.042	Diagnostic: Power & Electrical Circuits III
PH0.045	Diagnostic: Fundamental States of Matter
PH0.049	Diagnostic: Calculating Density
PH0.051	Diagnostic: Specific Latent Heat
PH0.053	Diagnostic: Pressure in Gases

Diagnostics continued

Code	Diagnostic Name
PH0.056	Diagnostic: Structure of Atoms
CH0.006	Diagnostic: History of the Atom
PH0.058	Diagnostic: Nuclear Decay
PH0.060	Diagnostic: Half-life & Dangers of Radiation
PH0.066	Diagnostic: Introduction to Forces
PH0.068	Diagnostic: Newton's Laws
PH0.072	Diagnostic: Using F=ma
PH0.074	Diagnostic: Extension of Springs
PH0.082	Diagnostic: Introduction to Motion

Code	Diagnostic Name
PH0.086	Diagnostic: Distance-time Graphs
PH0.090	Diagnostic: Acceleration
PH0.094	Diagnostic: Velocity-time Graphs
PH0.100	Diagnostic: Terminal Velocity
PH0.102	Diagnostic: Thinking, Braking & Stopping Distance
PH0.108	Diagnostic: Wave Properties
PH0.110	Diagnostic: Wave Calculations
PH0.115	Diagnostic: Electromagnetic Spectrum
PH0.125	Diagnostic: Magnetism & Electromagnetism

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Energy	Prior knowledge	Diagnostic: Energy Stores & Transfers	PH1.01	Energy Stores	Recall and describe the different energy stores.
	6.1.1.1		PH1.02	Systems in Physics	Describe the different systems used for models.
	6.1.1.1		PH1.03	Changing Energy Stores	Identify the conservation of energy and changes in energy stores.
	6.1.1.1		PH1.04	Energy Pathways	Identify and describe the different methods of energy transfer between stores.
	6.1.1.1		PH1.05	Energy Pathways in a System	Evaluate energy pathways within different system models.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Energy	6.1.1.1	Diagnostic: Calculating Energy Transfers I	PH1.06	Using W=Fd to Calculate Work I	Calculate work done using the equation W=Fd. Includes some application of knowledge but no unit conversions.
	6.1.1.2		PH1.09	Using $E=\frac{1}{2}mv^2$ to Calculate Kinetic Energy I	Calculate kinetic energy using the equation $E=\frac{1}{2}mv^2$. Includes some application of knowledge but no unit conversions.
	6.1.1.2		PH1.13	Using E=mgh to Calculate Gravitational Potential Energy I	Calculate gravitational potential energy using the equation E=mgh. Includes some application of knowledge but no unit conversions.
	6.1.1.2		PH1.18	Energy Transfers: KE to GPE	Describe energy transfers between kinetic and gravitational potential energy stores. Includes some application of knowledge.
	6.1.1.2		PH1.21	Using $E=\frac{1}{2}ke^2$ to Calculate Elastic Potential Energy I	Calculate elastic potential energy using the equation $E=\frac{1}{2}ke^2$. Includes some application of knowledge but no unit conversions.
	6.1.1.2		PH1.25	Energy Transfers: KE to EPE	Describe energy transfers between kinetic and elastic potential energy stores. Includes some application of knowledge.
	6.1.1.2		PH1.27	Calculating Energy Transfers: A Bouncing Ball I	Describe and explain the energy transfers involved in a bouncing ball (KE/GPE/EPE & Thermal). Calculations, no unit conversions or rearranging.
	6.1.1.1		PH1.07	Using W=Fd to Calculate Work II	Calculate work done using the equation W=Fd. Includes application and unit conversions.
	6.1.1.2		PH1.10	Using $E=\frac{1}{2}mv^2$ to Calculate Kinetic Energy II	Calculate kinetic energy using the equation $E=\frac{1}{2}mv^2$. Includes application and unit conversions.
	6.1.1.2		PH1.14	Using E=mgh to Calculate Gravitational Potential Energy II	Calculate gravitational potential energy using the equation E=mgh. Includes application and unit conversions.
	6.1.1.2		PH1.22	Using $E=\frac{1}{2}ke^2$ to Calculate Elastic Potential Energy II	Calculate elastic potential energy using the equation $E=\frac{1}{2}ke^2$. Includes application and unit conversions.
	6.1.1.1		PH1.08	Rearranging the W=Fd Equation	Rearrange W=Fd to find force and distance, includes unit conversions.
	6.1.1.2		PH1.11	Rearranging the $E=\frac{1}{2}mv^2$ Equation I	Rearrange $E=\frac{1}{2}mv^2$ to find mass, includes unit conversions.
	6.1.1.2		PH1.15	Rearranging the E=mgh Equation I	Rearrange E=mgh to find mass, includes unit conversions.
	6.1.1.2		PH1.16	Rearranging the E=mgh Equation II	Rearrange E=mgh to find height, includes unit conversions.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Energy	6.1.1.2	Diagnostic: Calculating Energy Transfers I	PH1.17	Rearranging the E=mgh Equation III	Rearrange E=mgh to find gravitational field strength, includes unit conversions.
	6.1.1.2		PH1.19	Calculating Energy Transfers: KE to GPE	Describe and explain energy transfers between kinetic and gravitational potential energy stores. Includes application, unit conversions and calculations.
	6.1.1.2		PH1.23	Rearranging the $E=\frac{1}{2}ke^2$ Equation I	Rearrange $E=\frac{1}{2}ke^2$ to find spring constant, includes unit conversions.
	6.1.1.2		PH1.26	Calculating Energy Transfers: KE to EPE	Describe and explain energy transfers between kinetic and elastic potential energy stores. Includes application, unit conversions and calculations.
	6.1.1.2		PH1.28	Calculating Energy Transfers: A Bouncing Ball II	Describe and explain the energy transfers involved in a bouncing ball (KE/GPE/EPE & Thermal). Includes multi step calculations, unit conversions and rearranging.
	6.1.1.4	Diagnostic: Power	PH1.30	Power	Define power in relation to energy and time.
	6.1.1.4		PH1.31	Using P=E/t to Calculate Power I	Calculate power using the equation P=E/t. Includes some application of knowledge but no unit conversions.
	6.1.1.4		PH1.32	Using P=E/t to Calculate Power II	Calculate power using the equation P=E/t. Includes application and unit conversions.
	6.1.1.4		PH1.33	Rearranging the P=E/t Equation	Rearrange P=E/t to find energy transferred and time, includes unit conversions.
	6.1.1.4		PH1.34	Using P=W/t to Calculate Power I	Calculate power combining the equations P=W/t and W=Fd. Includes some application of knowledge but no unit conversions.
	6.1.1.5		PH1.35	Using P=W/t to Calculate Power II	Calculate power combining the equations P=W/t and W=Fd. Includes application and unit conversions.
	6.1.1.4		PH1.36	Rearranging the P=W/t Equation	Rearrange P=W/t to find work done and time, includes unit conversions.
	Prior knowledge	Diagnostic: Specific Heat Capacity	PH1.37	Thermal Energy & Temperature	Identify the difference between thermal energy and temperature.
	Prior knowledge		PH1.39	Direction of Thermal Energy Transfer	Describe how the direction of thermal energy transfer.
	6.1.1.3		PH1.40	Specific Heat Capacity	Describe the specific heat capacity of a material.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Energy	6.1.1.3	Diagnostic: Specific Heat Capacity	PH1.41	Using the Specific Heat Capacity Equation I	Use the specific heat capacity equation E=mcθ. Includes some application of knowledge but no unit conversions.
	6.1.1.3		PH1.42	Using the Specific Heat Capacity Equation II	Use the equation involving specific heat capacity E=mcθ. Includes unit conversions.
	6.1.1.3		PH1.43	Rearranging the Specific Heat Capacity Equation	Rearrange E=mcθ to find mass, temperature change and specific heat capacity. Includes unit conversions.
	6.1.1.3 & RP14		PH1.46	Required Practical 14: Specific Heat Capacity of Solids I	Investigate the specific heat capacity of solids for required practical 14. This version of the practical uses a joulemeter to measure the energy transferred.
	6.1.1.3 & RP14		PH1.47	Required Practical 14: Specific Heat Capacity of Liquids I	Investigate the specific heat capacity of liquids for required practical 14. This version of the practical uses a joulemeter to measure the energy transferred.
	Prior knowledge	Diagnostic: Energy Transfers & Efficiency	PH1.48	Energy Transfers by Heating: Conduction	Describe energy transfers in solids by conduction.
	Prior knowledge		PH1.49	Energy Transfers by Heating: Convection	Describe energy transfers in fluids by convection.
	Prior knowledge		PH1.50	Energy Transfers by Heating: Radiation	Describe energy transfers by infrared radiation.
	RP21		PH1.52	Required Practical 21: Radiation and Absorption	Investigate radiation using a Lesley cube for required practical 21.
	Supplementary		PH1.53	Calculating Payback Time I	Calculate the payback time of appliances and other investments. Includes some application of knowledge but no unit conversions.
	Supplementary		PH1.54	Calculating Payback Time II	Calculate the payback time of appliances and other investments. Includes application and unit conversions.
	6.1.2.1		PH1.55	Reducing Unwanted Energy Transfers: Thermal Insulation	Compare methods of reducing thermal energy transfer around the home considering conduction, convection and radiation.
	6.1.2.1		PH1.56	Reducing Unwanted Energy Transfers: Vacuum Flask	Compare methods of reducing thermal energy transfer with a vacuum flask considering conduction, convection and radiation.
	6.1.2.1		PH1.58	Reducing Unwanted Energy Transfers: Lubrication	Explore methods of reducing energy transfers through lubrication.
	6.1.2.2		PH1.59	Calculating Efficiency I	Calculate the efficiency of an object based on the input and output. Includes some application of knowledge but no unit conversions.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 1: Energy	6.1.2.2	Diagnostic: Energy Transfers & Efficiency	PH1.60	Calculating Efficiency II	Calculate the efficiency of an object based on the input and output. Includes application and unit conversions.
	6.1.2.2		PH1.61	Rearranging the Efficiency Equation	Rearrange the efficiency equation to find the input and output, includes unit conversions.
	6.1.2.1		PH1.62	Energy Dissipation	Describe the dissipation of energy to the surroundings.
	6.1.2.2		PH1.63	How to Draw a Sankey Diagram	Illustrate the efficiency of an object using Sankey diagrams.
	6.1.3	Diagnostic: Energy Resources	PH1.65	Renewable & Non-Renewable Energy Resources	Identify a range of renewable and non-renewable energy resources.
	6.1.3		PH1.66	Wind Power	Describe how wind turbines can generate electricity.
	6.1.3		PH1.67	Solar Power	Describe how solar cells can generate electricity.
	6.1.3		PH1.68	Geothermal Power	Describe how geothermal power stations can generate electricity.
	6.1.3		PH1.69	Hydroelectric Power	Describe how hydroelectric dams can generate electricity.
	6.1.3		PH1.70	Pumped Storage	Describe how hydroelectric dams and other systems can be used as pumped storage systems.
	6.1.3		PH1.71	Wave Power	Describe how waves can generate electricity on and offshore.
	6.1.3		PH1.72	Tidal Barrages	Describe how tidal barrages can generate electricity.
	6.1.3		PH1.73	Bio-Fuels	Describe how bio-fuels can generate electricity.
	6.1.3		PH1.74	Fossil Fuels	Describe how fossil fuels can generate electricity.
	6.1.3		PH1.75	Nuclear Power	Describe how nuclear fission reactors can generate electricity.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 1: Energy	6.1.3	Diagnostic: Energy Resources	PH1.76	Summary of Energy Generation	Summarise different methods of energy generation.
	6.1.3		PH1.77	Use of Energy Resources	Consider the issues regarding energy generation and usage.
	6.1.3		PH1.78	Interpreting Energy Resource Use	Evaluate trends in energy demand including the use of graphs.
	6.1.3		PH1.79	Trends in Use of Energy Resources	Analyse current trends in energy use away from carbon dioxide emitting sources.
	Topic Review	-	PH1.80	Topic 1 Review: Energy - Set A	Physics Topic 1 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	PH1.81	Topic 1 Review: Energy - Set B	Physics Topic 1 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 2: Electricity	Prior knowledge	Diagnostic: Introduction to Electricity	PH2.01	Modelling Electricity	Identify models to help understand the concept of electrical circuits.
	Prior knowledge		PH2.02	Conductors & Insulators	Identify materials as either electrical conductors or insulators.
	6.2.1.1		PH2.03	Circuit Symbols	Identify and describe the uses of the main circuit symbols used to represent components in circuits.
	6.2.1.1		PH2.04	Series & Parallel Circuits	Recognise and describe the difference between series and parallel circuits in terms of routes for electrons and loops.
	Supplementary		PH2.05	Conventional Current vs Electron Flow	Distinguish the difference between the direction of conventional current and electron flow.
	6.2.1.1		PH2.06	Drawing Circuits	Drawing series and parallel circuit diagrams.
	6.2.1.1		PH2.07	Interpreting Circuits I	Interpreting how circuits work using circuit diagrams.
	6.2.1.1		PH2.08	Interpreting Circuits II	Interpreting how circuits work using circuit diagrams, requiring greater logical thinking.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Electricity	6.2.1.2	Diagnostic: Electrical Charge	PH2.09	Electrical Charge & Current	Describe the difference between charge and current in electrical circuits.
	6.2.1.2		PH2.10	Using Q=It to Calculate Charge I	Calculate charge using the equation Q=It. Includes some application of knowledge questions, but no unit conversions.
	6.2.1.2		PH2.11	Using Q=It with Circuit Diagrams I	Calculate charge using the equation Q=It. Includes application of knowledge questions using circuit diagrams, but no unit conversions.
	6.2.1.2		PH2.12	Using Q=It to Calculate Charge II	Calculate charge using the equation Q=It. Includes application and unit conversions.
	6.2.1.2		PH2.13	Using Q=It with Circuit Diagrams II	Calculate charge using the equation Q=It. Includes application of knowledge questions using circuit diagrams, including unit conversions.
	6.2.1.2		PH2.14	Rearranging Q=It	Rearrange Q=It to find current and time. Includes unit conversions.
	6.2.1.2		PH2.15	Rearranging Q=It with Circuit Diagrams	Rearrange Q=It to find current and time. Includes application of circuit diagrams and unit conversions.
	6.2.1.3	Diagnostic: Potential Difference	PH2.16	Potential Difference	Describe potential difference and how to measure it within a circuit.
	6.2.1.3		PH2.17	Resistance	Describe resistance in term of electrons and different factors that can impact resistance, such as thickness and length.
	6.2.1.3		PH2.18	Using V=IR to Calculate pd I	Calculate potential difference using the equation V=IR. Includes some application of knowledge questions, but no unit conversions.
	6.2.1.3		PH2.19	Using V=IR with Circuit Diagrams I	Calculate potential difference using the equation V=IR. Includes application of knowledge questions using circuit diagrams, but no unit conversions.
	6.2.1.3		PH2.20	Using V=IR to Calculate pd II	Calculate potential difference using the equation V=IR. Includes application and unit conversions.
	6.2.1.3		PH2.21	Using V=IR with Circuit Diagrams II	Calculate potential difference using the equation V=IR. Includes application of knowledge questions using circuit diagrams, including unit conversions.
	6.2.1.3		PH2.22	Rearranging V=IR	Rearrange V=IR to find current and resistance. Includes unit conversions.
	6.2.1.3		PH2.23	Rearranging V=IR with Circuit Diagrams	Rearrange V=IR to find current and resistance. Includes application of circuit diagrams and unit conversions.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Electricity	6.2.1.4	Diagnostic: Ohmic & Non-ohmic Conductors	PH2.24	Ohm's Law: Resistance & Temperature	Describe the impact of temperature on resistance in terms of electron collisions. Identify Ohm's Law and classify components as ohmic or non-ohmic conductors.
	RP15		PH2.25	Required Practical 15: Resistance & Length	Investigate how the resistance of a wire varies with its length.
	6.2.1.4		PH2.27	Ohmic Conductors: Fixed Resistors	Describe the resistance of fixed resistors as ohmic conductors. Including to identify the corresponding IV graph.
	RP16		PH2.28	Required Practical 16: I-V Resistor	Investigate the current-potential difference relationships of a fixed resistor.
	6.2.1.4		PH2.30	Non-ohmic Conductors: Filament Bulbs	Describe the resistance of filament bulbs as non-ohmic conductors. Including to identify the corresponding IV graph.
	RP16		PH2.31	Required Practical 16: I-V Filament Bulb	Investigate the current-potential difference relationships of a filament bulb.
	6.2.1.4		PH2.33	Non-ohmic Conductors: Diodes	Describe the resistance of diodes as non-ohmic conductors. Including to identify the corresponding IV graph.
	RP16		PH2.34	Required Practical 16: I-V Diode	Investigate the current-potential difference relationships of a diode.
	6.2.1.4		PH2.36	Non-ohmic Conductors: Thermistors	Describe the resistance of thermistors as non-ohmic conductors. Including to identify the corresponding IV graph.
	6.2.1.4		PH2.37	Practical: Resistance of Thermistors	Investigate the relationship between resistance and temperature of a thermistor.
	6.2.1.4		PH2.38	Non-ohmic Conductors: LDRs	Describe the resistance of light dependent resistors (LDRs) as non-ohmic conductors. Including to identify the corresponding IV graph.
	6.2.1.4		PH2.39	Practical: Resistance of LDRs	Investigate the relationship between resistance and light intensity of an LDR.
	6.2.1.4		PH2.40	Applications of Non-ohmic Conductors	Describe applications of diodes, thermistors and LDRs in different settings.
	6.2.2	Diagnostic: Series & Parallel Circuits	PH2.41	Current in Series & Parallel Circuits	Describe the behaviour of current in series and parallel circuits.
	6.2.2		PH2.42	Potential Difference in Series & Parallel Circuits	Describe the behaviour of potential difference in series and parallel circuits.

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Topic	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 2: Electricity	6.2.2	Diagnostic: Series & Parallel Circuits	PH2.43	Resistance in Series & Parallel Circuits	Describe the behaviour of resistance in series and parallel circuits. Does not include calculating resistance in parallel circuits.
	RP15		PH2.44	Required Practical 15: Resistance in Series & Parallel	Investigate the resistance within series and parallel circuits.
	6.2.2		PH2.46	Series & Parallel Circuit Comparisons	Compare and identify how current, potential difference and resistance behaves in series and parallel circuits.
	6.2.2		PH2.47	Circuit Problem Solving with V=IR Equation I	Solve circuit problems using the V=IR relationship, while applying how current, potential difference and resistance behaves in series and parallel circuits. Problems require up to two steps to answer.
	6.2.3.1	Diagnostic: Mains Electricity	PH2.49	AC vs DC	Describe the difference between direct and alternating currents.
	6.2.3.1		PH2.50	UK Electricity Supply	Identify the properties of the UK electricity supply.
	Supplementary		PH2.51	Calculating Frequency I	Describe and calculate frequency in various contexts, including AC electricity. Includes some application of knowledge questions, but no unit conversions.
	Supplementary		PH2.52	Calculating Frequency II	Describe and calculate frequency in various contexts, including AC electricity. Includes some application of knowledge questions involving unit conversions.
	Supplementary		PH2.53	Oscilloscope Traces to Calculate Frequency	Use an oscilloscope trace to calculate the frequency of a signal. Includes unit conversions between milliseconds and seconds.
	Supplementary		PH2.54	Oscilloscope Traces to Calculate Peak Pd	Use an oscilloscope trace to calculate the peak potential difference of a signal.
	6.2.3.2		PH2.55	Wiring a Plug: Type G/UK	Identify the structure of a type G (UK) plug. Describe the concept of grounding devices with earth wire and the potential differences between wires.
	6.2.3.2		PH2.56	Choosing a Fuse	Describe the function of a fuse and how to select the correct rating of fuse for an appliance.
	6.2.3.2		PH2.57	Electricity Supply Safety	Describe the safety features of electrical appliances to protect their users. Includes fuses, circuit breakers, materials and the concept of grounding and double insulation.
	6.2.3.2		PH2.58	Dangers of Electricity	Describing the dangers of domestic electricity supplies.
	6.2.4.3		PH2.59	The National Grid	Explain the purpose of the National Grid and how it improves efficiencies using transformers.

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Topic	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 2: Electricity	6.2.4.2	Diagnostic: Power & Electrical Circuits I	PH2.63	Work Done in a Circuit	Describe the work done in an electrical circuits and appliances. Introducing the E=QV equation.
	6.2.4.2		PH2.64	Using E=QV to Calculate Energy I	Calculate work done by electrical appliances using E=QV. Includes some application of knowledge questions, but no unit conversions.
	6.2.4.2		PH2.65	Using E=QV with Circuit Diagrams I	Calculate work done in electrical circuits using E=QV. Includes some application of circuit diagrams, but no unit conversions.
	6.2.4.2		PH2.70	Energy Transfers in Everyday Appliances	Describe the process of energy transfer in electrical devices. Define 1 W.
	6.2.4.2		PH2.71	Using E=Pt to Calculate Energy I	Calculate the energy transferred by electrical appliances using E=Pt. Includes some application of knowledge questions, but no unit conversions.
	6.2.4.1		PH2.74	Power in Electrical Devices	Identify that power is related to the potential difference across it and the current through it with the equation P=IV.
	6.2.4.1		PH2.75	Using P=IV to Calculate Power I	Calculate power of electrical devices using the P=IV equation. Includes some application of knowledge questions, but no unit conversions.
	6.2.4.1		PH2.76	Using P=IV with Circuit Diagrams I	Calculate power of electrical components using the P=IV equation. Includes some application of circuit diagrams, but no unit conversions.
	6.2.4.1		PH2.81	Using $P=I^2R$ to Calculate Power I	Calculate power of electrical devices using the $P=I^2R$ equation. Assumes knowledge of P=IV. Includes some application of knowledge questions, but no unit conversions.
	6.2.4.1		PH2.82	Using $P=I^2R$ with Circuit Diagrams I	Calculate power of electrical components using the $P=I^2R$ equation. Assumes knowledge of P=IV. Includes some application of circuit diagrams, but no unit conversions.
	6.2.4.2	Diagnostic: Power & Electrical Circuits II	PH2.66	Using E=QV to Calculate Energy II	Calculate work done by electrical appliances using E=QV. Includes application and unit conversions questions.
	6.2.4.2		PH2.67	Using E=QV with Circuit Diagrams II	Calculate work done in electrical circuits using E=QV. Includes application of circuit diagrams and unit conversions.
	6.2.4.2		PH2.72	Using E=Pt to Calculate Energy II	Calculate the energy transferred by electrical appliances using E=Pt. Includes application and unit conversions questions.
	6.2.4.1		PH2.77	Using P=IV to Calculate Power II	Calculate power of electrical devices using the P=IV equation. Includes application and unit conversions questions.
	6.2.4.1		PH2.78	Using P=IV with Circuit Diagrams II	Calculate power of electrical components using the P=IV equation. Includes application of circuit diagrams and unit conversions.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 2: Electricity	6.2.4.1	Diagnostic: Power & Electrical Circuits II	PH2.83	Using $P=I^2R$ to Calculate Power II	Calculate power of electrical devices using the $P=I^2R$ equation. Assumes knowledge of P=IV. Includes application and unit conversions questions.
	6.2.4.1		PH2.84	Using $P=I^2R$ with Circuit Diagrams II	Calculate power of electrical components using the $P=I^2R$ equation. Assumes knowledge of P=IV. Includes application of circuit diagrams and unit conversions.
	6.2.4.2	Diagnostic: Power & Electrical Circuits III	PH2.68	Rearranging E=QV	Rearrange the E=QV equation to calculate charge and potential difference. Includes unit conversions.
	6.2.4.2		PH2.69	Rearranging E=QV with Circuit Diagrams	Rearrange the E=QV equation to calculate charge and potential difference. Includes application of circuit diagrams and unit conversions.
	6.2.4.2		PH2.73	Rearranging E=Pt	Rearrange the E=Pt equation to calculate power and time. Includes application and unit conversions questions.
	6.2.4.1		PH2.79	Rearranging P=IV	Rearrange the P=IV equation to calculate current and potential difference. Includes application and unit conversions questions.
	6.2.4.1		PH2.80	Rearranging P=IV with Circuit Diagrams	Rearrange the P=IV equation to calculate current and potential difference. Includes application of circuit diagrams and unit conversions.
	6.2.4.1		PH2.85	Rearranging $P=I^2R$	Rearrange the $P=I^2R$ equation to calculate resistance and current. Assumes knowledge of P=IV. Includes application and unit conversions questions.
	6.2.4.1		PH2.86	Rearranging $P=I^2R$ with Circuit Diagrams	Rearrange the $P=I^2R$ equation to calculate resistance and current. Assumes knowledge of P=IV. Includes application of circuit diagrams and unit conversions.
	Topic Review	'	PH2.94	Topic 2 Review: Electricity - Set A	Physics Topic 2 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	'	PH2.95	Topic 2 Review: Electricity - Set B	Physics Topic 2 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 3: Particle Model of Matter	6.3.3.1	Diagnostic: Pressure in Gases	PH3.39	Particle Motion in Gases	State that the particles of a gas are in constant random motion and that increasing temperature of the gas increases the average kinetic energy of the particles.
	6.3.3.1		PH3.41	Gas Pressure	Explain how the collision of gas particles with an object exerts a force on that object.
	6.3.3.1		PH3.42	Temperature & Gas Pressure	Explain how changing the temperature of a gas, held at constant volume, changes the pressure exerted by the gas.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 3: Particle Model of Matter	6.3	Diagnostic: Fundamental States of Matter	PH3.01	Fundamental States of Matter: Characteristics	Identify the four fundamental states of matter and their basic properties.
	6.3.1.1		PH3.02	Fundamental States of Matter: Particle Model	Describe the arrangement, movement and the relative energy of particles in the fundamental states of matter using the particle model.
	6.3.1.1		PH3.03	Density	Identify the meaning of density and comparing the density of different objects.
	6.3.1.1		PH3.04	Density of Fundamental States of Matter	Describe density and make comparisons using the particle model.
	6.3.1.2		PH3.20	Phase Transitions	Describe phase transition between the different fundamental states of matter.
	6.3.1.2		PH3.21	Phase Transitions: Particle Model	Describe the phase transition between the different fundamental states of matter using the particle model.
	Supplementary		PH3.22	Evaporation vs Boiling	Describe and compare the different forms of vaporisation that can occur.
	6.3.1.2		PH3.23	Physical vs Chemical Changes: The Particle Model	Identify the difference between chemical and physical changes.
	6.3.1.1		PH3.24	Phase Transitions: Melting & Boiling Points	Predict the physical state of a substance under specified conditions, given suitable data.
	6.3.1.1	Diagnostic: Calculating Density	PH3.05	Using ρ=m/V to Calculate Density I	Calculate density in kg/m^3 and g/cm^3 using the ρ=m/V equation. Includes application questions, but no unit conversions.
	6.3.1.1		PH3.06	Using ρ=m/V to Calculate Density II	Calculate density in kg/m^3 and g/cm^3 using the ρ=m/V equation. Includes application questions and unit conversions.
	6.3.1.1		PH3.07	Rearranging ρ=m/V	Rearrange the ρ=m/V equation to calculate mass and volume. Includes application and unit conversions questions.
	RP17		PH3.08	Required Practical 17: Density of Regular Shapes	Investigate the density of regular shaped objects using a top pan balance and either a ruler or vernier callipers.
	6.3.1.1		PH3.10	Calculating Density of Regular Shapes I	Calculate density in kg/m^3 and g/cm^3 using the ρ=m/V equation. Includes application questions requiring calculating volumes of simple regular shapes (cubes, cuboids &
	6.3.1.1		PH3.11	Calculating Density of Regular Shapes II	Calculate density in kg/m^3 and g/cm^3 using the ρ=m/V equation. Includes application questions requiring calculating volumes of regular shapes (including cones and cylinders).

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 3: Particle Model of Matter	RP17	Diagnostic: Calculating Density	PH3.12	Required Practical 17: Density of Irregular Shapes	Investigate the density of irregular shaped objects using eureka displacement cans and measuring cylinders.
	6.3.1.1		PH3.14	Calculating Density of Irregular Shapes I	Calculate density in kg/m^3 and g/cm^3 using the $\rho=m/V$ equation. Includes practical related questions without the need for unit conversions.
	6.3.1.1		PH3.15	Calculating Density of Irregular Shapes II	Calculate density in kg/m^3 and g/cm^3 using the $\rho=m/V$ equation. Includes practical related questions with the need for unit conversions.
	RP17		PH3.16	Required Practical 17: Density of Liquids	Investigate the density of liquids using a top pan balance and measuring cylinder.
	6.3.1.1		PH3.18	Calculating Density of Liquids I	Calculate density in kg/m^3 and g/cm^3 using the $\rho=m/V$ equation. Includes practical related questions without the need for unit conversions.
	6.3.1.1		PH3.19	Calculating Density of Liquids II	Calculate density in kg/m^3 and g/cm^3 using the $\rho=m/V$ equation. Includes practical related questions with the need for unit conversions.
	6.3.2.1	Diagnostic: Specific Latent Heat	PH3.26	Internal Energy	Identify the internal energy of a system and related changes due to the heating of the system.
	6.3.2.2 & RP14		PH3.29	Required Practical 14: Specific Heat Capacity of Solids II	Investigate the specific heat capacity of solids for required practical 14. This version of the practical uses ammeters and voltmeters to measure the energy transferred, requiring an understanding of P=IV and E=Pt.
	6.3.2.2 & RP14		PH3.30	Required Practical 14: Specific Heat Capacity of Liquids II	Investigate the specific heat capacity of liquids for required practical 14. This version of the practical uses ammeters and voltmeters to measure the energy transferred, requiring an understanding of P=IV and E=Pt.
	6.3.2.3		PH3.31	Specific Latent Heat	Describe the specific latent heat of a material. Identify the difference between the latent heat of fusion and the latent heat of vaporisation.
	6.3.2.3		PH3.32	Heating & Cooling Graphs I	Interpret heating and cooling graphs showing a change of state. Graphs remain within the same graph quadrant.
	6.3.2.3		PH3.33	Heating & Cooling Graphs II	Interpret heating and cooling graphs showing a change of state. Graphs include negative numbers and span two graph quadrants.
	6.3.2.3		PH3.34	Using E=mL to Calculate Energy I	Calculating the energy required for a substance to change state using the E=mL equation. Includes application questions, but no unit conversions.
	6.3.2.3		PH3.35	Using E=mL to Calculate Energy II	Calculating the energy required for a substance to change state using the E=mL equation. Includes application questions and requires unit conversions.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 3: Particle Model of Matter	6.3.2.3	Diagnostic: Specific Latent Heat	PH3.36	Rearranging E=mL	Rearrange the E=mL equation to calculate mass and the specific latent heat of a substance. Includes application questions and requires unit conversions.
	6.3.2.3		PH3.37	Practical: Latent Heat of Fusion	Investigate the latent heat of fusion of ice using an immersion heater and funnel.
	6.3.2.3		PH3.38	Specific Heat Capacity vs Specific Latent Heat	Distinguish between specific heat capacity and specific latent heat.
	Topic Review	-	PH3.53	Topic 3 Review: Particle Model of Matter - Set A	Physics topic 3 review for combined science aqa trilogy foundation tier.
	Topic Review	-	PH3.54	Topic 3 Review: Particle Model of Matter - Set B	Physics topic 3 review for combined science aqa trilogy foundation tier.
Topic 4: Atomic Structure	6.4.1.1	Diagnostic: Structure of Atoms	CH1.08	Atomic Structure	Describe the structure of the atom.
	6.4.1.1		CH1.09	Size of Atoms	Recall the radius of an atom/nucleus and relate size and scale of atoms to objects.
	6.4.1.2		CH1.10	Atomic Number & Mass Number	Use the atomic number and mass number to calculate the numbers of subatomic particles.
	6.4.1.2		CH1.11	Isotopes	Recall the definition of an isotope and apply it to familiar situations.
	6.4.1.2		CH1.12	What is Relative? Mass & Charges	Recall the relative masses/charges of subatomic particles and define relative atomic mass.
	6.4.1.1		CH1.14	Electronic Structure	Recall the 2, 8, 8 structure and apply this to the first 20 elements.
	6.4.1.1		CH1.15	Changing Energy Levels	Recall that electron arrangements may change with the absorption/emission of electromagnetic radiation and apply this to familiar situations.
	6.4.1.2		CH1.46	Forming Ions	Describe how ions form, draw and write the electronic structure of ions and identify ion formed using the periodic table.
	6.4.1.3	Diagnostic: History of the Atom	CH1.32	Development of Scientific Models	Describe the scientific method and identify different types of model.
	6.4.1.3		CH1.33	Dalton's Atomic Theory of Matter	Describe and use early models of the atom.

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Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 4: Atomic Structure	6.4.1.3	Diagnostic: History of the Atom	CH1.34	Thomson's Plum Pudding Model	Describe and use the Plum Pudding Model, and explain how the model was developed.
	6.4.1.3		CH1.35	Rutherford's Nuclear Model	Describe and use the Nuclear Model, and explain how the model was developed.
	6.4.1.3		CH1.36	Bohr's Planetary Model	Describe and use the Planetary Model, and explain how the model was developed.
	6.4.1.3		CH1.37	Discovery of Protons	Recall the discovery of protons and explain how this added to the model of the atom.
	6.4.1.3		CH1.38	Chadwick & the Discovery of the Neutron	Recall the discovery of neutrons and explain how this added to the model of the atom.
	6.4.1.3		CH1.39	History of the Atom - a Timeline	Recall the timeline of the atomic model and identify the different models from diagrams.
	6.4.1.3		CH1.40	Plum Pudding vs the Nuclear Model	Compare the Plum Pudding Model to the Nuclear Model of the atom.
	6.4.2.1	Diagnostic: Nuclear Decay	PH4.01	Discovery of Radioactivity	Identify how radioactivity was discovered and why it is measured in becquerels (Bq).
	6.4.2.1		PH4.02	Nuclear Decay: α (Alpha)	Identify and describe the emission of alpha decay.
	6.4.2.1		PH4.03	Nuclear Decay: β- (Beta minus)	Identify and describe the emission of beta minus decay.
	6.4.2.1/6.4.2.2		PH4.04	Nuclear Decay: γ (Gamma)	Identify and describe the emission of gamma decay.
	6.4.2.1		PH4.05	Nuclear Decay: n (Neutron)	Identify and describe the emission of neutron decay.
	6.4.2.1		PH4.06	Nuclear Decay: Summary	Identify and describe the different types of nuclear decay. This includes alpha, beta minus, gamma and neutron decay.
	6.4.2.1		PH4.07	Ionising Radiation	Identify the relative ionising properties of alpha, beta and gamma decay.
	6.4.2.1		PH4.08	Detecting Radiation	Describe how to detect ionising radiation using spark plates and a Geiger–Müller tube.

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Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 4: Atomic Structure	6.4.2.1	Diagnostic: Nuclear Decay	PH4.09	Penetrating Properties of Radiation	Identify the penetration properties of nuclear decay through materials and their range in air.
	6.4.2.2		PH4.10	Nuclear Equations: α Decay	Write balanced alpha decay equations using the names and symbols of common nuclei and particles.
	6.4.2.2		PH4.11	Nuclear Equations: β- Decay	Write balanced beta decay equations using the names and symbols of common nuclei and particles.
	6.4.2.2		PH4.12	Nuclear Equations: Summary	Write balanced alpha and beta decay equations using the names and symbols of common nuclei and particles.
	6.4.2.2		PH4.13	Nuclear Equations: Identify Decay	Identify the daughter elements from alpha and beta decay equations.
	6.4.2.3	Diagnostic: Half-life & Dangers of Radiation	PH4.14	Half-lives	Describe the concept of half-life and the random nature of radioactive decay.
	6.4.2.3		PH4.15	Half-lives from a Graph	Determine the half-life of a radioactive isotope from a graph.
	6.4.2.3		PH4.16	Calculating Half-lives I	Calculate the half-life of a radioactive isotope from the information provided.
	6.4.2.4		PH4.19	Radioactive Contamination	Identify the hazards associated with radioactive contamination.
	6.4.2.4		PH4.20	Irradiation	Describe the process of irradiation and suitable precautions to protect against it.
	6.4.2.4		PH4.21	Comparing Contamination & Irradiation	Compare the hazards associated with contamination and irradiation.
	6.4.2.4		PH4.22	Effects of Radiation on Animals	Describe the dangers of ionising radiation in terms of tissue damage and possible mutations for animals.
	6.4.2.1		PH4.23	Uses of Radiation	Describe the uses of nuclear radiation and evaluate the best sources of radiation to use in a given situation.
	6.4.2.6		PH4.24	Radiation: Peer Review	Describe the importance of peer review of research into the effects of radiation on humans.
	Topic Review	'	PH4.35	Topic 4 Review: Atomic Structure - Set A	Physics Topic 4 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	'	PH4.36	Topic 4 Review: Atomic Structure - Set B	Physics Topic 4 Review for Combined Science AQA Trilogy Foundation Tier.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 4: Atomic Structure	Paper Review	-	PH4.43	Paper 1 Review: Physics - Set A	Physics Paper 1 Review for Combined Science AQA Trilogy Foundation Tier.
	Paper Review	-	PH4.44	Paper 1 Review: Physics - Set B	Physics Paper 1 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 5: Forces	6.5.1.1	Diagnostic: Introduction to Forces	PH5.001	Scalar & Vector Quantities	Define scalars and vectors.
	6.5.1.2		PH5.002	Introduction to Forces	Describe what a force is and how to represent it.
	6.5.1.2		PH5.003	Contact & Non-Contact Forces	Describing the difference between contact and non-contact forces.
	6.5.1.3		PH5.004	Weight vs Mass	Describing the difference between contact and non-contact forces.
	6.5.1.3		PH5.005	Using W=mg to Calculate Weight I	Using the formula W=mg to calculate the Weight of an object.
	6.5.1.3		PH5.006	Using W=mg to Calculate Weight II	Using the formula W=mg to calculate the weight of an object, with unit conversions.
	6.5.1.3		PH5.007	Rearranging W=mg	Rearranging the formula W=mg.
	6.5.1.3		PH5.008	Centre of Mass	Describe the centre of mass.
	6.5.1.3		PH5.009	Practical: Finding the Centre of Mass of a Lamina	Investigate how to locate the centre of mass of different lamina.
	6.5.4.2.1	Diagnostic: Newtons Laws	PH5.010	Balanced & Unbalanced Forces: Newton's First Law	Describe balanced and unbalanced forces and describe Newton's first law.
	6.5.1.4		PH5.014	Resultant Forces: Determining	Using Newton's First law to determine the resultant force acting on an object.
	6.5.1.4		PH5.015	Resultant Forces: Calculating	Using Newton's 1st law to calculate the resultant force acting on an object.
	6.5.1.4		PH5.016	Practical: Effect of Surface Materials on Friction	Investigate how surface friction on an object affects the resultant force applied to an object.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 5: Forces	6.5.1.4	Diagnostic: Newtons Laws	PH5.017	Practical: Effect of Weight on Friction	Investigate how the weight of an object affects the magnitude of the frictional forces when a resultant force is applied to it.
	6.5.4.2.3		PH5.018	Newton's Third Law	Describing Newton's 3rd Law.
	6.5.4.2.2		PH5.023	Resultant Forces: Newton's Second Law	Describe Newton's 2nd law.
	6.5.4.2.2	Diagnostic: Using F=ma	PH5.024	Using F=ma to Calculate Resultant Force I	Applying the formula F=ma to calculate the resultant force on an object.
	6.5.4.2.2		PH5.025	Using F=ma to Calculate Resultant Force with Diagrams I	Applying the formula F=ma to calculate the resultant force on an object from diagrams.
	6.5.4.2.2		PH5.026	Using F=ma to Calculate Resultant Force II	Applying the formula F=ma to calculate the resultant force on an object with unit conversions.
	6.5.4.2.2		PH5.027	Using F=ma to Calculate Resultant Force with Diagrams II	Applying the formula F=ma to calculate the resultant force on an object from diagrams with unit conversions.
	6.5.4.2.2		PH5.028	Rearranging F=ma	Rearranging the formula F=ma.
	6.5.4.2.2		PH5.029	Rearranging F=ma with Diagrams	Rearranging the formula F=ma using values from diagrams.
	6.5.4.2.2		PH5.030	Using F=ma to Estimate Forces	Using the formula F=ma to estimate everyday forces.
	6.5.4.2.2		PH5.031	Required Practical 19: Effect of Force on Acceleration at Constant Mass	Investigate how changing the force of an object affects the acceleration when its mass remains constant.
	6.5.4.2.2		PH5.033	Required Practical 19: Effect of Mass on Acceleration with a Constant Force	Investigate how changing the mass of an object affects the acceleration when a constant force is applied.
	6.5.3	Diagnostic: Extension of Springs	PH5.035	Stretching & Compressing	Describe how forces can change the shape of an object.
	6.5.3		PH5.036	Elastic vs Inelastic Deformation	Explain the difference between plastic and elastic deformation.
	6.5.3		PH5.037	Required Practical 18: Hooke's Law – Method & Data Collection	Investigate how the extension of a spring changes when a force is applied to it.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 5: Forces	6.5.3	Diagnostic: Extension of Springs	PH5.039	Hooke's Law	Describe Hooke's Law and the relationship between force and extension or compression.
	6.5.3		PH5.040	Hooke's Law: Limit of Proportionality	Explain the conditions needed for Hooke's law to apply to a material being stretched or compressed.
	6.5.3		PH5.041	Required Practical 18: Hooke's Law – Analysis & Conclusions	Analyse and conclude Hooke's Law practical.
	6.5.3		PH5.043	Using F=ke to Calculate Force I	Using the relationship between force and extension, with conversions from cm to m.
	6.5.3		PH5.044	Using F=ke to Calculate Force with Diagrams I	Using the relationship between force and extension with diagrams, with conversions from cm to m.
	6.5.3		PH5.045	Using F=ke to Calculate Force II	Using the relationship between force and extension, with units conversions required
	6.5.3		PH5.046	Using F=ke to Calculate Force with Diagrams II	Using the relationship between force and extension with diagrams, with other conversions from cm to m.
	6.5.3		PH5.047	Rearranging F=ke	Rearranging the F=ke equation for different applications.
	6.5.3		PH5.048	Rearranging F=ke with Diagrams	Rearranging the F=ke equation for different applications with diagrams.
	6.5.3		PH5.049	Work Done on Springs	Describe how the work done on a spring can be calculated.
	6.5.3		PH5.050	Using $E=\frac{1}{2}ke^2$ to Calculate Elastic Potential Energy with Diagrams I	Apply the equation for work done on a spring with diagrams, with unit conversions from cm to m.
	6.5.3		PH5.051	Using $E=\frac{1}{2}ke^2$ to Calculate Elastic Potential Energy with Diagrams II	Apply the equation for work done on a spring with diagrams, with unit conversions.
	6.5.3		PH5.052	Rearranging the $E=\frac{1}{2}ke^2$ Equation with Diagrams I	Rearranging the equation for work done on a spring with diagrams and unit conversions.
	6.5.4.1.1	Diagnostic: Introduction to Motion	PH5.077	Distance vs Displacement	Describe the difference between distance and displacement.
	6.5.4.1.2		PH5.078	Speed	Describe speeds as constant or varying and compare typical speeds.
	6.5.4.1.3		PH5.079	Speed vs Velocity	Describe the difference between speed and velocity.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 5: Forces	6.5.4.1.2	Diagnostic: Introduction to Motion	PH5.081	Using s=vt to Calculate Distance I	Calculate distance using s=vt. Includes some application of knowledge questions but no unit conversions.
	6.5.4.1.2		PH5.082	Using s=vt to Calculate Distance II	Calculate distance using s=vt. Includes some application of knowledge and unit conversion questions.
	6.5.4.1.2		PH5.083	Practical: Measuring Speed	Describe how to measure and record distance and time. Recorded data is used to calculate speed.
	6.5.4.1.2		PH5.084	Rearranging s=vt to Calculate Speed	Rearrange the s=vt equation to calculate speed. Includes unit conversions.
	6.5.4.1.2		PH5.085	Rearranging s=vt to Calculate Time	Rearrange the s=vt equation to calculate time. Includes unit conversions.
	6.5.4.1.4	Diagnostic: Distance-time Graphs	PH5.086	Distance-time Graphs I	Identify the basic features of a distance-time graph and use them to describe the motion of an object.
	6.5.4.1.4		PH5.087	Distance-time Graphs II	Identify more complex features of a distance-time graph and use them to describe the motion of an object.
	6.5.4.1.4		PH5.088	Drawing Distance-time Graphs from Measurements	Explain how to draw and plot a distance-time graph from collected data.
	6.5.4.1.2		PH5.089	Instantaneous Speed vs Average Speed	Describe the difference between instantaneous and average speed.
	6.5.4.1.2		PH5.090	Using v=s/t to Calculate Average Speed I	Calculate average speed using v=s/t. Includes some application of knowledge questions but no unit conversions.
	6.5.4.1.2		PH5.091	Using v=s/t to Calculate Average Speed II	Calculate distance using s=vt. Includes some application of knowledge and unit conversion questions.
	6.5.4.1.2		PH5.092	Rearranging v=s/t with Average Speed	Rearrange the v=s/t equation to find distance and time. Includes unit conversions.
	6.5.4.1.2		PH5.093	Calculating Average Speed Using a Distance-time Graph	Use a distance-time graph to determine the average speed.
	6.5.4.1.4		PH5.094	Calculating Constant Speed Using a Distance-time Graph	Calculate the gradient of a straight line to determine the speed of an object.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 5: Forces	6.5.4.1.5	Diagnostic: Acceleration	PH5.098	Calculating Acceleration Using a=(v-u)/t I	Calculate uniform acceleration using a=Δv/t. Includes some application of knowledge questions but no unit conversions.
	6.5.4.1.5		PH5.099	Calculating Acceleration Using a=(v-u)/t II	Calculate uniform acceleration using a=Δv/t. Includes some application of knowledge questions and unit conversions.
	6.5.4.1.5		PH5.100	Calculating Acceleration Using a=(v-u)/t III	Calculate uniform acceleration using a=Δv/t. Quantities must be identified from a diagram. Includes unit conversions.
	6.5.4.1.5		PH5.101	Changing the Subject of the Acceleration Equation	Rearrange the acceleration equation to calculate the change in velocity and time. Includes unit conversions.
	6.5.4.1.5		PH5.102	Estimating Everyday Acceleration I	Estimate everyday accelerations.
	6.5.4.1.5		PH5.103	Estimating Everyday Acceleration II	Estimate everyday acceleration using estimates for typical speeds.
	AT3		PH5.105	Practical: Acceleration Using Light Gates	Explain how light gates and an air track can be used to determine acceleration.
	6.5.4.1.5		PH5.114	Using $v^2-u^2=2as$ to Calculate a or s	Use the equation to calculate uniform acceleration or distance. No unit conversions are required.
	6.5.4.1.5		PH5.116	Using $v^2-u^2=2as$ in Context Calculating a or s	Use the equation to calculate uniform acceleration or distance in context with unit conversions.
	6.5.4.1.5	Diagnostic: Velocity-time Graphs	PH5.106	Velocity-time Graphs I	Identify the basic features of a velocity-time graph and use them to describe the motion of an object.
	6.5.4.1.5		PH5.107	Velocity-time Graphs II	Identify more complex features of a velocity-time graph and use them to describe the motion of an object.
	6.5.4.1.5		PH5.109	Calculating Acceleration Using a Velocity-time Graph I	Calculate the gradient of a straight line to determine the acceleration of an object.
	6.5.4.1.5		PH5.113	Drawing Velocity-time Graphs From Measurements	Explain how to find velocity and time experimentally and how to plot the results on a suitable graph.
	Prior Knowledge	Diagnostic: Terminal Velocity	PH5.120	Drag & Air Resistance	Describe the factors that change the magnitude of drag forces.
	6.5.4.1.5		PH5.121	Acceleration Due to Gravity	Identify that near the Earth's surface any object falling freely under gravity has an acceleration of about 9.8 m/s^2.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 5: Forces	6.5.4.1.5	Diagnostic: Terminal Velocity	PH5.122	Terminal Velocity	Define terminal velocity and explain how it is caused.
	6.5.4.1.5		PH5.125	Terminal Velocity: Motion of a Skydiver	Explain the motion of a skydiver.
	6.5.4.3.2	Diagnostic: Thinking, Braking & Stopping Distance	BI5.013	Required Practical 6: Reaction Time	Investigate the effect of caffeine on reaction time using the 'ruler drop' test.
	6.5.4.3.2		BI5.015	Reaction Time: Describing Nervous System Data	Describe patterns in reaction time data that are presented in tables.
	6.5.4.3.2		BI5.016	Reaction Time: Interpreting Nervous System Data	Interpreting patterns in reaction time data that is presented in tables.
	6.5.4.3.1 & 6.5.4.3.3		PH5.129	Thinking, Braking & Stopping Distance	Calculate stopping distance using thinking and braking distance and describe the factors that affect thinking distance and braking distance.
	6.5.4.3.3		PH5.131	Estimating Stopping Distances I	Estimate stopping distances using graphs.
	6.5.4.3.4		PH5.133	Energy Changes During Braking	Explain how braking reduces the kinetic energy store of vehicles.
	6.5.4.3.4		PH5.135	Dangers of Large Decelerations	Explain the danger of large braking forces and large decelerations.
	Topic Review	-	PH5.150	Topic 5 Review: Forces - Set A	Physics Topic 5 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	PH5.151	Topic 5 Review: Forces - Set B	Physics Topic 5 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 6: Waves	6.6.1.1	Diagnostic: Wave Properties	PH6.01	Longitudinal Waves	Describe the characteristics of longitudinal waves.
	6.6.1.1		PH6.02	Transverse Waves	Describe the characteristics of transverse waves.
	6.6.1.1		PH6.03	Longitudinal vs Transverse Waves	Describe the difference between longitudinal and transverse waves.
	6.6.1.2		PH6.04	Properties of Waves	Describe the features of a wave in terms of wavelength, frequency, peak/crest, trough and amplitude.

AQA		CENTURY			
Strand	Spec Code	Diagnostic	Nugget Code	Nugget Name	Nugget Summary
Topic 6: Waves	6.6.1.2	Diagnostic: Wave Calculations	PH6.05	Using T=1/f to Calculate Wave Period I	Calculate time period using T=1/f. Includes some application of knowledge questions, but no unit conversions.
	6.6.1.2		PH6.06	Using T=1/f to Calculate Wave Period II	Calculate time period using T=1/f. Includes application and unit conversion questions.
	6.6.1.2		PH6.07	Rearranging T=1/f	Rearrange the T=1/f equation to calculate frequency. Includes unit conversions.
	6.6.1.2		PH6.08	Using v=fλ to Calculate Wave Speed I	Calculate wave speed using v=fλ. Includes application and unit conversion questions.
	6.6.1.2		PH6.09	Using v=fλ to Calculate Wave Speed II	Calculate wave speed using v=fλ. Includes application and unit conversion questions involving standard form.
	6.6.1.2		PH6.10	Using v=fλ to Calculate Wave Speed III	Calculate wave speed using v=fλ. Includes extracting information from diagrams and graphs with unit conversion questions.
	6.6.1.2		PH6.11	Rearranging v=fλ	Rearrange the v=fλ equation to calculate frequency and wavelength. Includes unit conversions.
	6.6.1.2		PH6.12	Practical: Speed of Sound in Air	Describe a method to measure the speed of sound waves in air.
	RP20		PH6.13	Required Practical 20: Speed of Waves on a String	Describe a method to measure the speed of waves on in a solid.
	RP20		PH6.15	Required Practical 20: Waves in Ripple Tank	Describe a method to measure the speed of ripples on a water surface.
	Prior knowledge	Diagnostic: Electromagnetic Spectrum	PH6.17	Reflection of Waves	Identify that waves can be reflected, absorbed or transmitted at the boundary between two different materials.
	Prior knowledge		PH6.22	Refraction of Waves	Identify the process of refraction of waves at a boundary between two mediums.
	6.6.2.1		PH6.32	EM Spectrum: Introduction	Identify the order of the electromagnetic spectrum and the general characteristics of electromagnetic waves.
	6.6.2.1 & 6.6.2.4		PH6.33	EM Spectrum: Radio Waves	Provide examples that illustrate the transfer of energy by radio-waves.
	6.6.2.1 & 6.6.2.4		PH6.35	EM Spectrum: Microwaves	Provide examples that illustrate the transfer of energy by microwaves.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 6: Waves	6.6.2.1 & 6.6.2.4	Diagnostic: Electromagnetic Spectrum	PH6.36	EM Spectrum: Infrared Radiation	Provide examples that illustrate the transfer of energy by infrared radiation.
	6.6.2.1 & 6.6.2.4		PH6.37	EM Spectrum: Visible Light	Provide examples that illustrate the transfer of energy by visible light.
	6.6.2.1, 6.6.2.3 & 6.6.2.4		PH6.38	EM Spectrum: Ultraviolet	Provide examples that illustrate the transfer of energy by ultraviolet. Identify that ultraviolet wavelengths are ionising.
	6.6.2.1, 6.6.2.3 & 6.6.2.4		PH6.39	EM Spectrum: X-rays	Provide examples that illustrate the transfer of energy by x-rays. Identify that x-ray wavelengths are ionising.
	6.6.2.1, 6.6.2.3 & 6.6.2.4		PH6.40	EM Spectrum: Gamma Rays	Provide examples that illustrate the transfer of energy by gamma. Identify that gamma wavelengths are ionising.
	6.6.2.1, 6.6.2.3 & 6.6.2.4		PH6.41	EM Spectrum: Summary of Uses	Identify the order of the electromagnetic spectrum and provide examples that illustrate the transfer of energy by electromagnetic waves. Identify the ionising parts of the EM spectrum.
	6.6.2.2		PH6.45	Refraction Ray Diagrams	Construct ray diagrams to illustrate the refraction of a wave at the boundary between two different media.
	6.6.2.3		PH6.48	EM Spectrum: Exposure to Radiation	Describe the harmful effects on people of excessive exposure to electromagnetic radiation, notably on human bodily tissues.
	6.6.2.3		PH6.49	EM Spectrum: Evaluating Risks & Consequences	Compare different radiation doses (in sieverts) and draw conclusions from given data about risks and consequences of exposure to radiation.
	Topic Review	-	PH6.70	Topic 6 Review: Waves - Set A	Physics Topic 6 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	PH6.71	Topic 6 Review: Waves - Set B	Physics Topic 6 Review for Combined Science AQA Trilogy Foundation Tier.
Topic 7: Magnetism and Electromagnetism	6.7.1.1	Diagnostic: Magnetism & Electromagnetism	PH7.01	Attraction & Repulsion of Magnets	Describe the attraction and repulsion between unlike and like poles.
	6.7.1.1		PH7.02	Permanent & Induced Magnets	Identify magnetic materials and describe the difference between permanent and induced magnets.
	6.7.1.2		PH7.03	Magnetic Fields Around a Bar Magnet	Describe the shape and direction of the magnetic field around bar magnets and relate the strength of the field to the concentration of field lines.
	6.7.1.2		PH7.04	Evidence that the Core of Earth is Magnetic	Explain how the behaviour of a magnetic compass provides evidence that the core of the Earth must be magnetic.

AQA		CENTURY			
Strand	**Spec Code**	**Diagnostic**	**Nugget Code**	**Nugget Name**	**Nugget Summary**
Topic 7: Magnetism and Electromagnetism	6.7.2.1	Diagnostic: Magnetism & Electromagnetism	PH7.05	Magnetic Fields Around a Wire	Describe how a current can create a magnetic field around a wire and the associated factors affecting the magnetic field.
	6.7.2.1		PH7.06	Solenoids & Electromagnets	Explain how solenoid arrangements can enhance the magnetic effect.
	Topic Review	-	PH7.27	Topic 7 Review: Magnetism - Set A	Physics Topic 7 Review for Combined Science AQA Trilogy Foundation Tier.
	Topic Review	-	PH7.28	Topic 7 Review: Magnetism - Set B	Physics Topic 7 Review for Combined Science AQA Trilogy Foundation Tier.

Course Content

Science – IGCSE Biology: Edexcel

Diagnostics 19 **Strands** 18 **Nuggets** 103

This course is an alternative version of our GCSE course rearranged in the format of the Edexcel IGCSE with some supplementary nuggets covering the additional content. You can edit this course to match your specification.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostic	19
Cell Biology	12
Biological Molecules	3
Respiration	3
Photosynthesis & Plant Responses	6
Transport Systems	5
Digestion	3
The Circulatory System	5
Transport Systems in Plants	3
Non-Communicable Disease	4
Communicable Disease & Medicine	9
Reproduction	7
Inheritance	10
Human Nervous System	5
Homeostasis	9
Ecosystems	9
Human Effect on the Environment	4
Use of Biological Resources	6

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
BH0.01	Diagnostic: Cell Biology
BIE0.02	Diagnostic: Biological Molecules
BIE0.03	Diagnostic: Respiration
BIE0.04	Diagnostic: Photosynthesis and Plant Responses
BIE0.06	Diagnostic: Transport Systems
BIE0.07	Diagnostic: Circulatory System
BIE0.08	Diagnostic: Transport Systems in Plants
BIE0.09	Diagnostic: Digestion
BIE0.10	Diagnostic: Non-Communicable Diseases
BH0.05	Diagnostic: Communicable Diseases and Medicine
BIE0.11	Diagnostic: Reproduction
BIE0.12	Diagnostic: Inheritance and Genetics
BIE0.13	Diagnostic: Inheritance 2
BIE0.14	Diagnostic: Human Nervous System
BIE0.15	Diagnostic: Homeostasis 1
BIE0.16	Diagnostic: Homeostasis 2
BIE0.17	Diagnostic: Ecosystems
BIE0.18	Diagnostic: Human Effect on the Environment
BIE0.19	Diagnostic: Uses of Biological Resources

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Cell Biology	BH1.01	Eukaryotic Cells
	BH1.02	Prokaryotic Cells
	BH1.03	Microscopy
	BH1.04	Orders of Magnitude
	BH1.05	Microorganisms: Aseptic Technique
	BH1.06	Analysing Bacterial Cultures
	BH1.07	Specialised Cells
	BH1.08	Cell Division: Mitosis
	BH1.09	Cell Division: Cancer
	BH1.10	Cell Division: Meiosis
	BH1.11	Cell Differentiation & Stem Cells
	BH1.12	Stem Cells in Medicine
Biological Molecules	BH2.01	Biological Molecules
	BH2.04	Enzyme Action
	BH2.05	Factors Affecting Rate of Enzyme Activities
Respiration	BIE2.06	Respiration and ATP
	BIE2.07	Anaerobic Respiration
	BH2.03	Respiration: Effects of Exercise
Photosynthesis & Plant Responses	BIE2.08	Structure of a Leaf
	BH6.01	Photosynthesis
	BH6.02	Limiting Factors of Photosynthesis
Photosynthesis & Plant Responses	BH6.03	Controlling Photosynthesis
	BH6.04	Plant Tropisms: Auxin
	BH6.05	Using Plant Hormones: Auxin, Gibberellins & Ethene
Transport Systems	BH3.01	Cells, Tissues and Organs
	BH3.02	Transport in Cells: Diffusion
	BH3.03	Transport in Cells: Osmosis
	BH3.04	Transport in Cells: Active Transport
	BH3.05	Exchange Surfaces & SA:V
Digestion	PSc2.02	Healthy Diet
	BIE3.14	Physical Digestion
	BIE3.15	Enzymes: Digestion
The Circulatory System	BH3.06	Circulatory System: Blood Components
	BH3.07	Circulatory System: Blood Vessels
	BH3.08	Circulatory System: The Heart
	BH3.09	Circulatory System: Breathing & Gaseous Exchange
	BH4.05	Cardiovascular Disease
Transport Systems in Plants	BH3.10	Plant Tissues and Organs
	BH3.11	Transport in Plants: Xylem and Phloem
	BH3.12	Transpiration: Stomata and Factors Affecting Rate
Non-Communicable Disease	BH4.01	Health & Disease
	BH4.02	Diet, Exercise & Disease
	BH4.03	Smoking and Disease
	BH4.04	Alcohol & Disease

Strand	Code	Nugget Name
Communicable Disease & Medicine	BH5.01	Pathogens: Spread & Prevention
	BH5.02	Bacterial Diseases
	BH5.03	Viral Diseases
	BH5.04	Fungal Diseases
	BH5.05	Protist Diseases: Malaria
	BH5.06	Plant Disease: Detection & Defence
	BH5.07	Human Defence System
	BH5.08	Vaccines & Drugs
	BH5.09	Developing Drugs
Reproduction	PSc1.05	Pollination and Fertilisation
	PS3.08	Asexual Reproduction
	BH7.01	Asexual & Sexual Reproduction
	BH11.03	Puberty & the Menstrual Cycle
	BH11.04	Hormones & the Menstrual Cycle
	BH11.05	Contraception Methods
	BH11.06	Infertility Treatments
Inheritance	BH7.02	DNA & The Genome
	BH7.03	DNA Structure & Protein Synthesis
	BH7.04	Gene Expression & Mutation
	BH7.05	Inheritance & Genetic Diagrams
	BH7.06	Inherited Disorders, Codominance & Sex Determination
	BH7.07	History of Inheritance: Mendel & Variation
	BH8.01	Theory of Natural Selection

Strand	Code	Nugget Name
Inheritance	BH8.02	Evidence for Evolution
	BH8.03	Darwin, Wallace & Speciation
	BH8.04	Classification Systems
Human Nervous System	BH10.01	The Nervous System
	BH10.02	Reflex Arcs
	BH10.03	The Eye: Structure and Function
	BH10.04	The Eye: Common Defects and Treatment
	BH10.05	The Brain
Homeostasis	BH11.01	The Endocrine System
	BH12.02	Removing Waste Products
	BH11.02	Negative Feedback, Thyroxine & Adrenaline
	BIE11.09	Kidneys
	BH12.04	Dialysis and Kidney Transplant
	BH12.05	ADH & Water Balance
	BH12.01	Thermoregulation
	BH11.08	Role of Glucagon
	BH11.07	Insulin & Diabetes
Ecosystems	BH9.01	Levels of Organisation
	BH9.02	Competition in Animals and Plants
	BH9.03	Feeding Relationships and Trophic Levels
	BH9.04	Biomass: Pyramids and Transfers
	BH9.05	Distribution & Abundance of Organisms
	BH9.06	The Decay Cycle

Strand	Code	Nugget Name
Ecosystems	BH9.07	The Carbon Cycle
	BH9.08	The Nitrogen Cycle
	BH9.09	The Water Cycle
Human Effect on the Environment	BH13.01	The Impact of Environmental Changes
	BH13.02	Climate Change and Habitat Loss
	BH13.03	Pollution
	BH13.04	Maintaining Biodiversity
Use of Biological Resources	BIE13.06	Food Production
	BIE13.07	Micro-organisms
	BH13.05	Food Security
	BH8.05	Selective Breeding
	BH8.06	Cloning Methods
	BH8.07	Genetic Engineering & Gene Technologies

Course Content

Science – IGCSE Chemistry: Edexcel

Diagnostics 12 **Strands** 13 **Nuggets** 85

This course is an alternative version of our GCSE course rearranged in the format of the Edexcel IGCSE with some supplementary nuggets covering the additional content. You can edit this course to match your specification.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostic	12
Principles of Chem: Elements, Mixtures and Compounds	10
Principles of Chem: Atomic Structure and the Periodic Table	8
Principles of Chem: Chemical Formulae, Equations and Calculations	8
Principles of Chem: Structure, Bonding and the Properties of Matter	6
Inorganic Chem: Gases in the Atmosphere	3
Inorganic Chemistry: Groups 1, 7 and Reactivity Series	5
Inorganic Chem: Metals	8
Inorganic Chem: Acids, Bases and Salts	8
Inorganic Chem: Chemical Analysis	7
Energy Changes	5
The Rates of Reactions	8
Organic Chemistry	9

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
CI0.01	Diagnostic: Elements, Mixtures and Compounds
CI0.02	Diagnostic: Atomic Structure and The Periodic Table
CI0.03	Diagnostic: Chemical Formulae, Equations and Calculations
CI0.04	Diagnositc: Structure, Bonding and The Properties of Matter
CI0.06	Diagnostic: Gases in the Atmosphere
CI0.07	Diagnostic: Groups 1, 7 and the Reactivity Series
CI0.08	Diagnostic: Metals
CI0.09	Diagnostic: Acids, Bases and Salts
CI0.10	Diagnostic: Chemical Analysis
CI0.11	Diagnostic: Energy Changes
CHH0.05	Diagnostic: The Rates of Reactions
CI0.12	Diagnostic: Organic Chemistry

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Principles of Chem: Elements, Mixtures and Compounds	CHH2.01	States of Matter: Particle Model & Limitations
	CHH1.03	Atoms, Elements & Compounds
	CHH7.01	Pure Substances and Mixtures
	CHH7.04	Separation Techniques: Chromatography
	SP2.08	Chromatography Practical

Strand	Code	Nugget Name
Principles of Chem: Elements, Mixtures and Compounds	CHH7.02	Separation Techniques: Filtration and Crystallisation
	CHH7.03	Separation Techniques: Simple and Fractional Distillation
	CHH9.04	Fractional Distillation of Crude Oil
	SP2.07	Distillation Practical
	CI7.10	Solubility
Principles of Chem: Atomic Structure and the Periodic Table	CHH1.01	Atomic Structure
	CHH1.02	The Atomic Model
	CHH1.04	Atomic Number, Mass Number & Isotopes
	CHH1.05	Electronic Structure of Atoms
	CHH1.06	Conservation of Mass
	CHH1.07	Development of the Periodic Table
	CHH1.08	Electronic Structure & The Periodic Table
	CHH1.11	Metals, Non-metals & Transition Metals
Principles of Chem: Chemical Formulae, Equations and Calculations	CHH3.01	Chemical Formulae & Empirical Formulae
	CHH3.02	Balancing Chemical Equations
	CHH8.01	Mole: Mass and Molar Mass
	CHH8.02	Avogadro's Constant & Mole
	CHH8.03	Stoichiometry & Limiting Reactants
	CHH8.04	Mole: Concentration & Volume of Solutions
	CHH8.06	Mole: Volume of Gases
	CHH9.08	Percentage Yield & Atom Economy
Principles of Chem: Structure,	CHH2.02	Chemical Bonds: Ionic Bonding
	CHH2.03	Chemical Bonds: Covalent Bonding

Strand	Code	Nugget Name
Principles of Chem: Structure, Bonding and the Properties of Matter	CHH2.04	Chemical Bonds: Metallic Bonding
	CHH2.05	Chemical Bonds: Changes of State
	CHH2.06	Chemical Bonds: Types of Substances
	CHH2.07	Carbon: Structure and Bonding
Inorganic Chem: Gases in the Atmosphere	CHH10.01	Earth's Atmosphere: Formation and Development
	CHH10.02	Greenhouse Effect and Climate Change
	CHH10.03	Effects of Common Air Pollutants
Inorganic Chemistry: Groups 1, 7 and Reactivity Series	CHH1.09	Alkali Metals
	CHH1.10	The Halogens
	CHH3.07	Redox Reactions
	CHH3.08	The Reactivity Series & Displacement Reactions
	CHH9.03	Corrosion: Process & Prevention
Inorganic Chem: Metals	CHH9.05	Extraction of Metals: Electrolysis
	CHH9.06	Extraction of Metals: Reduction with Carbon
	CHH9.07	Extraction Of Metals: Biological Methods
	CHH3.09	Electrolysis: The Process
	CHH3.10	Electrolysis: Predicting the Products
	SP2.02	Electrolysis Practical
	CHH9.01	Materials & Recycling
	CHH9.02	Materials: Properties & Uses
Inorganic Chem: Acids, Bases and Salts	CHH3.04	The pH Scale & Neutralisation
	CHH3.05	Acids: Reactions with Metals and Carbonates
	CHH3.06	Acids: Strength & Concentration

Strand	Code	Nugget Name
Inorganic Chem: Acids, Bases and Salts	SP2.01	Investigating pH
	SP2.12	Carrying out Titration Reactions
	CHH8.05	Mole: Titration Calculation
	SP2.13	Titration Calculations from Experiments
	SP2.06	Making Salts
Inorganic Chem: Chemical Analysis	CHH3.03	Testing for Gases
	CHH7.05	Tests for Cations
	SP2.09	Identifying Cations: Flame Tests Practical
	SP2.10	Identifying Cations: Precipitate Tests Practical
	CHH7.06	Tests for Anions
	SP2.11	Identifying ions: Testing for Non-Metals Practical
	CHH7.07	Instrumental Methods of Analysis
Energy Changes	CHH4.01	Exothermic & Endothermic Reactions
	CHH4.02	Reaction Profiles
	CHH4.03	Bond Energy Calculations
	CI4.04	Calorimetry (Combustion)
	CI4.05	Calorimetry (Solutions)
The Rates of Reactions	CHH5.01	Rate of Reaction: Measuring & Analysing
	CHH5.02	Collision Theory
	CHH5.03	Rate of Reaction: The Effect of Catalysts
	CHH5.04	Reversible Reactions & Dynamic Equilibrium
	CHH5.05	Dynamic Equilibrium: The Effect of Reaction Conditions
	SP2.05	Rates of Reaction: Concentration (Cross Method)
The Rates of Reactions	SP2.03	Rates of Reaction: Surface Area (HCl and Marble)
	SP2.04	Rates of Reaction: Temperature (HCl and Mg)
Organic Chemistry	CHH6.01	Organic Reactions: Alkanes
	CHH6.02	Organic Reactions: Alkenes
	CHH6.03	Organic Reactions: Alcohols
	CI6.08	Manufacture of Alcohols
	CHH6.04	Organic Reactions: Carboxylic Acids
	CI6.09	Esters
	CHH6.05	Addition Polymerisation
	CHH6.06	Condensation Polymerisation
	CHH6.07	Natural Polymers & DNA

Course Content

Science – IGCSE Physics: Edexcel

Diagnostics 12 **Strands** 13 **Nuggets** 91

This course is an alternative version of our GCSE course rearranged in the format of the Edexcel IGCSE with some supplementary nuggets covering the additional content. You can edit this course to match your specification.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	12
Movement and Position	5
Forces, Movement, Shape and Momentum	13
Electricity	9
Waves in Matter	7
Light and Electromagnetic Waves	5
Energy Transfer	9
Work and Power	4
Energy Resources	4
Solids, Liquids and Gases	10
Magnetism and Electromagnetism	10
Radioactivity	9
Astrophysics	6

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
PI0.01	Diagnostic: Movement and Position
PI0.02	Diagnostic: Forces
PHH0.07	Diagnostic: Electricity
PHH0.05	Diagnostic: Waves in Matter
PI0.03	Diagnostic: Light and Electromagnetic Waves
PI0.04	Diagnostic: Energy Transfers
PI0.06	Diagnostic: Work and Power
PI0.08	Diagnostic: Energy Resources
PI0.10	Diagnostic: Particle model of matter
PHH0.11	Diagnostic: Magnetism and Electromagnetism
PHH0.09	Diagnostic: Radioactivity
PI0.12	Diagnostic: Space Physics

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Movement and Position	PI4.01	Speed and Velocity
	PI4.02	Acceleration and Deceleration
	PI4.03	Motion Graphs: Distance-Time Graphs
	PHH4.04	Motion Graphs: Velocity-Time Graphs
	PHH4.05	Motion Graphs: Enclosed Areas and Tangents

Strand	Code	Nugget Name
Forces, Movement, Shape and Momentum	PHH3.01	Forces Between Objects: Forces, Vectors and Scalars
	PHH3.03	Resultant Forces & Free Body Diagrams
	PHH4.08	Forces & Motion: Newton's Second Law and Inertial Mass
	PHH3.02	Weight, Mass and Gravitational Field Strength
	PHH4.06	Reaction Time & Stopping Distance
	PI3.05	Terminal Velocity
	PHH3.04	Elasticity and Hooke's Law
	PHH4.09	Forces & Motion: Momentum & Collisions
	PHH4.10	Impact Forces in Car Crashes
	PHH4.07	Forces Between Objects: Newton's Third Law
	PHH3.09	Moments: Levers
	PHH3.08	Moments and Equilibrium
	PI3.10	Moments: Forces along a Beam
Electricity	PHH10.04	Circuit Symbols
	PHH10.06	Parallel and Series Circuits
	PHH10.02	Introducing resistance, current and potential difference
	PHH10.03	Calculating Current, Potential Difference and Resistance
	PHH10.09	Resistance across different components
	PHH10.05	Power and energy
	PHH10.08	Domestic Electricity
	PHH10.07	The National Grid
	PHH10.01	Static Electricity & Electric Fields

Strand	Code	Nugget Name
Waves in Matter	PHH5.01	Features of Waves
	PHH5.02	Transverse and Longitudinal Waves
	PHH5.03	Waves: Measuring Speed
	PHH5.04	Waves: Reflection, Refraction, Transmission & Absorption
	PHH5.05	Human Hearing
	PHH5.06	Waves: Ultrasound
	PHH5.07	Waves: Seismic Waves
Light and Electromagnetic Waves	PHH6.01	Electromagnetic Waves
	PHH6.02	Uses of Electromagnetic Waves
	PHH6.06	Visible Light
	PI6.03	Refraction
	PI6.04	Total Internal Reflection
Energy Transfer	PHH1.01	Energy Stores and Pathways
	PHH1.02	Dissipation of Energy
	PI1.03	Calculating Efficiency
	PHH2.07	Increasing Efficiency
	PHH2.04	Conduction
	PHH2.05	Thermal Conduction in Metals: Free Electrons
	PI2.03	Convection
	PHH6.07	Infrared Radiation and Black Body Radiation
	PHH2.08	Heating and Insulating Buildings
Work and Power	PHH2.01	Work Done

Strand	Code	Nugget Name
Work and Power	PHH2.02	Power
	PI2.04	Kinetic Energy
	PHH1.04	Gravitational Potential Energy
Energy Resources	PHH1.06	Energy Sources: Fossil Fuels and Nuclear Power
	PHH1.07	Energy Sources: Biofuels, Wind, Solar and Geothermal
	PHH1.08	Energy Sources: Hydroelectricity, Waves and Tides
	PHH1.09	Energy Sources: Patterns & Trends
Solids, Liquids and Gases	PHH8.01	Density and States of Matter
	PHH3.05	Pressure: Surfaces
	PHH3.06	Pressure: Fluids
	PHH8.07	Pressure in gases and liquids
	PHH3.07	Pressure: Atmosphere
	PHH8.02	Physical and Chemical Changes
	PHH8.03	Specific Latent Heat and Specific Heat Capacity
	PHH8.04	Work Done on a gas
	PHH8.05	Gas pressure and temperature
	PHH8.06	Gas pressure and volume
Magnetism and Electromagnetism	PHH11.01	Magnetism: Permanent and Induced Magnets
	PHH11.02	Magnetic Fields
	PHH11.03	Magnetic Fields of Electric Currents
	PHH11.04	Uses of Electromagnets
	PHH11.05	The Motor Effect and Fleming's Left Hand Rule
	PHH11.06	The Motor Effect: Forces and Magnetic Flux Density

Strand	Code	Nugget Name
Magnetism and Electromagnetism	PHH11.07	Induced Potential: Alternators and Dynamos
	PHH11.08	Transformers: How they work
	PHH11.09	Transformers: Equations and Efficiency
	PHH11.10	Microphones and Speakers
Radioactivity	PHH7.01	The Atomic Model
	PHH7.02	Atoms, Isotopes and Ions
	PHH7.03	Radioactive Decay: Types of Radiation
	PHH7.04	Radioactive Decay: Nuclear Equations
	PHH7.05	Background Radiation
	PHH7.06	Half Life
	PHH7.07	Uses and Risks of Nuclear Radiation
	PHH7.08	Nuclear Fission
	PHH7.09	Nuclear Fusion
Astrophysics	PHH9.04	The Solar System
	PHH9.01	Orbits
	PHH9.03	The Life Cycle of Stars
	PI9.05	Hertzsprung-Russell and the Brightness of Stars
	PHH9.02	Red-Shift & the Expanding Universe
	PI9.06	The Doppler Effect

Course Content

Science Double Award IGCSE: Edexcel – Biology

Diagnostics 27 **Strands** 6 **Nuggets** 178

This course is an alternative version of our GCSE course rearranged in the format of the Edexcel IGCSE with some supplementary nuggets covering the additional content. You can edit this course to match your specification.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	27
Topic 1: The Nature & Variety of Living Organisms	21
Topic 2a - Structure & Functions in Living Organisms	64
Topic 2b - Structure & Functions in Living Organisms	41
Topic 3: Reproduction & Inheritance	22
Topic 4: Ecology & the Environment	30

Diagnostics

A diagnostic is a baseline assessment.

Code	Nugget Name
BIE0.20	Diagnostic: Living Organisms
BIE0.21	Diagnostic: Cell Structure
BIE0.22	Diagnostic: Pathogens & Disease
BIE0.23	Diagnostic: Specialised Cells, Tissues & Organs
BIE0.24	Diagnostic: The Chemistry of Food
BIE0.25	Diagnostic: Enzymes
BIE0.26	Diagnostic: Transport in Cells
BIE0.27	Diagnostic: Nutrition in Plants
BIE0.28	Diagnostic: Nutrition in Humans
BIE0.29	Diagnostic: Respiration
BIE0.30	Diagnostic: Gas Exchange in Humans
BIE0.31	Diagnostic: Transport in Humans
BIE0.32	Diagnostic: Cardiovascular Disease
BI0.18	Diagnostic: Plant Anatomy
BIE0.33	Diagnostic: Transpiration & Translocation
BIE0.34	Diagnostic: Plant Responses
BIE0.35	Diagnostic: Human Nervous System
BIE0.36	Diagnostic: Homeostasis
BIE0.37	Diagnostic: Human Hormones
BIE0.38	Diagnostic: Human Reproduction
BIE0.39	Diagnostic: Plant Reproduction
BIE0.40	Diagnostic: Inheritance & Cell Division
BIE0.41	Diagnostic: Variation & Evolution

BIE0.42	Diagnostic: Ecosystems and Feeding Relationships
BIE0.43	Diagnostic: Nutrient Cycles & Ecological Sampling
BIE0.44	Diagnostic: Human Influences on the Environment
BIE0.19	Diagnostic: Uses of Biological Resources

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Topic 1: The Nature & Variety of Living Organisms	BK1.01	Life Processes
	PS3.01	Grouping Living Things
	PS3.04	Further Grouping Living Things
	BK1.08	Unicellular and Multicellular Organisms
	BI1.01	Introduction to Prokaryotic & Eukaryotic Cells
	BI1.02	Animal Cells
	BI1.03	Plant Cells
	BI1.04	Comparing Animal & Plant Cells
	BI1.08	Algae
	BI1.05	Bacterial Cells
	BI1.07	Comparing Prokaryotic & Eukaryotic Cells
	BI1.10	Microscopes
	BI1.11	Calculating Magnification I
	BI1.12	Calculating Magnification II
	BI1.13	Rearranging the Magnification Equation
	BI1.14	Required Practical 1: Using a Light Microscope
	BH5.01	Pathogens: Spread & Prevention
	BH5.02	Bacterial Diseases
Topic 1: The Nature & Variety of Living Organisms	BH5.03	Viral Diseases
	BH5.04	Fungal Diseases
	BH5.05	Protist Diseases: Malaria
Topic 2a - Structure & Functions in Living Organisms	BI1.15	Differentiation
	BI1.16	Explaining the Structure of Specialised Animal Cells
	BI1.17	Explaining the Structure of Specialised Plant Cells
	BI2.01	Animal Tissues
	BI2.02	Human Organs
	BI2.03	Human Organ Systems
	BK9.01	Plant Tissues and Organs
	BI1.49	Exchange Surfaces: Leaves
	BI2.07	Chemistry of Food: Carbohydrates
	BI2.08	Chemistry of Food: Proteins
	BI2.09	Chemistry of Food: Lipids
	BI2.22	Required Practical 3: Qualitative Carbohydrate Tests
	BI2.24	Required Practical 3: Qualitative Lipid Tests
	BI2.23	Required Practical 3: Qualitative Protein Tests
	BI2.25	Required Practical 3: Testing Foods for Biological Molecules
	BI2.10	Enzymes: Structure & Function
	BI2.11	Enzymes: Metabolism
	BI2.12	Enzymes: Factors Affecting Activity
	BI2.13	Enzymes: Collision Theory
	BI2.14	Enzymes: Explaining Factors Affecting Activity
	BI2.15	Enzymes: Rate Calculations I
	BI2.16	Enzymes: Rate Calculations II
	BI2.17	Enzymes: Rate Calculations III

Strand	Code	Nugget Name
Topic 2a - Structure & Functions in Living Organisms	SP3.15	Investigating Temperature and Enzyme Activity
	BI2.26	Required Practical 4: Effect of pH on Amylase - Method
	BI2.27	Required Practical 4: Effect of pH on Amylase - Analysis & Concl.
	BI1.34	Exchanging Substances: Diffusion
	BI1.35	Factors Affecting the Rate of Diffusion
	BI1.36	Examples of Diffusion in Biology
	BI1.37	Exchanging Substances: Osmosis
	BI1.38	Required Practical 2: Osmosis - Method & Data Collection
	BI1.39	Required Practical 2: Osmosis - Analysis & Conclusion
	BI1.42	Exchanging Substances: Active Transport
	BI1.43	Examples of Active Transport
	BI1.44	Comparing Diffusion, Osmosis & Active Transport
	BI1.45	Surface Area to Volume Ratio
	BI1.46	The Need for Exchange Surfaces
	BK9.02	Photosynthesis
	BK9.04	Increasing Photosynthesis
	BK9.05	Plant Minerals
	BI2.78	Gas Exchange in Plants
	BK9.10	Investigating Plants
	SP3.07	Light Intensity & Photosynthesis
	BI2.06	Healthy Diet
	BI2.04	The Human Digestive System
	BI2.05	The Functions of the Digestive Organs
	BI2.18	Enzymes: Digestive Enzymes
	BI2.19	The Production & Function of Bile
	BI2.20	Enzymes: Describing Enzyme Activity Data

Strand	Code	Nugget Name
Topic 2a - Structure & Functions in Living Organisms	BI2.21	Enzymes: Interpreting Enzyme Activity Data
	BI1.48	Exchange Surfaces: Villi
	BIE3.14	Physical Digestion
	BK1.11	Aerobic Respiration
	BK1.12	Anaerobic Respiration
	SP3.13	Anaerobic respiration
	BIE2.06	Respiration and ATP
	BI2.34	The Human Gas Exchange System
	BI2.35	Mechanics of Breathing
	BI2.36	How Lungs are Adapted for Gas Exchange
	BI2.37	Calculating Breathing Rate I
	BI2.38	Calculating Breathing Rate II
	SP3.10	Physiology: Respiration
	BI1.47	Exchange Surfaces: Alveoli
	BI2.58	Smoking & Disease
	BI2.39	The Need for Transport Systems
	BI2.40	The Circulatory System
	BI2.41	Structure of the Heart
	BI2.42	Function of the Heart
	BI2.43	Explaining the Structure of the Heart
	BI2.44	Measuring Heart Rate
	BI2.52	Calculating the Rate of Blood Flow I
	BI2.53	Calculating the Rate of Blood Flow II
	BI2.46	The Structure and Function of Blood Vessels
	BI2.47	Explaining the Structure of Blood Vessels
	BI2.49	Blood Components & their Functions

Strand	Code	Nugget Name
Topic 2b - Structure & Functions in Living Organisms	BI2.50	The Structure of Blood Components
	BI2.51	Explaining the Structure of Blood Components
	BH5.07	Human Defence System
	BI2.63	Cardiovascular Disease
	BI2.65	Coronary Heart Disease
	BI2.66	Heart Attacks
	BI2.75	Plant Organs & Organ Systems
	BI2.76	Describing the Structure & Function of Plant Tissues
	BI2.77	Explaining the Structure of Plant Tissues
	BI2.79	Estimating the Surface Area of a Leaf
	BI2.80	Investigating Stomata
	BI2.81	Stomata Calculations & Estimations
	BI2.82	Plant Roots: Absorbing Water & Minerals
	BI2.83	Transpiration
	BI2.90	Translocation
	BI2.91	Comparing Transpiration & Translocation
	BH6.04	Plant Tropisms: Auxin
	BH6.05	Using Plant Hormones: Auxin, Gibberellins & Ethene
	SP3.11	Plant Responses to Light
	BH10.01	The Nervous System
	BH10.02	Reflex Arcs
	BH10.03	The Eye: Structure and Function
	BH10.04	The Eye: Common Defects and Treatment
	BH12.01	Thermoregulation
	BH12.02	Removing Waste Products
	BIE11.09	Kidneys

Strand	Code	Nugget Name
Topic 2b - Structure & Functions in Living Organisms	BH11.01	The Endocrine System
	BH11.03	Puberty & the Menstrual Cycle
	BH11.04	Hormones & the Menstrual Cycle
	BH11.07	Insulin & Diabetes
Topic 3: Reproduction & Inheritance	BH7.01	Asexual & Sexual Reproduction
	BK6.01	The Female Reproductive Organs
	BK6.02	The Male Reproductive Organs
	BK6.04	Sexual Reproduction in Humans
	BK6.05	Pregnancy
	BK9.06	Reproduction in Plants: Organs
	BK9.07	Reproduction in Plants: Methods of Pollination
	BK9.08	Reproduction in Plants: Fertilisation and Germination
	BK9.09	Reproduction in Plants: Methods of Seed and Fruit Dispersal
	PS3.08	Asexual Reproduction
	BH7.02	DNA & The Genome
	BH7.05	Inheritance & Genetic Diagrams
	BH7.06	Inherited Disorders, Codominance & Sex Determination
	BI1.20	Cell Division: Mitosis
	BH1.10	Cell Division: Meiosis
	BK10.01	Nature vs Nurture
	BK10.02	Species and Variation
	BK10.03	Investigating Variation in Species
	BK10.07	Natural Selection
	BH8.01	Theory of Natural Selection
	BH8.02	Evidence for Evolution
	BH8.03	Darwin, Wallace & Speciation

Strand	Code	Nugget Name
Topic 4: Ecology & the Environment	BK8.01	Types of Ecosystems
	BK8.02	Roles in Ecosystems
	BK8.03	Food Chains and Webs
	BK8.04	Role of the Producer
	BK8.06	Toxic Chemicals in Food Webs
	BK8.09	Investigating Ecosystems
	SP3.05	Ecological Sampling: Quadrats
	SP3.06	Ecological Sampling: Transects
	BK8.10	The Carbon Cycle
	BH9.01	Levels of Organisation
	BH9.03	Feeding Relationships and Trophic Levels
	BH9.04	Biomass: Pyramids and Transfers
	BH9.05	Distribution & Abundance of Organisms
	BK8.05	Human Impact on Ecosystems
	BK8.07	Human Impact on Insect Pollination
	BK8.08	Human Impact on the Atmosphere
	CK12.07	Climate
	CK12.08	Natural Climate Change
	CK12.09	Atmospheric Pollution
	CK12.10	Human Impact on Climate Change
	PK16.04	Global Warming
	BH13.01	The Impact of Environmental Changes
	BH13.02	Climate Change and Habitat Loss
	BH13.03	Pollution
	BIE13.06	Food Production
	BIE13.07	Micro-organisms

Strand	Code	Nugget Name
Topic 4: Ecology & the Environment	BH13.05	Food Security
	BH8.05	Selective Breeding
	BH8.06	Cloning Methods
	BH8.07	Genetic Engineering & Gene Technologies

Course Content

Science Double Award IGCSE: Edexcel – Chemistry

Diagnostics 23 **Strands** 6 **Nuggets** 136

This course is an alternative version of our GCSE course rearranged in the format of the Edexcel IGCSE with some supplementary nuggets covering the additional content. You can edit this course to match your specification.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	23
Topic 1 a - Principles of Chemistry	49
Topic 1 b - Bonding	32
Topic 2: Inorganic Chemistry	27
Topic 3: Physical Chemistry	21
Topic 4: Organic Chemistry	7

Diagnostics

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Code	Nugget Name
CI0.13	Diagnostic: Fundamental States of Matter
CI0.14	Diagnostic: Pure Substances, Mixtures & Separation Techniques
CH0.001	Diagnostic: Atoms, Elements & Compounds
CI0.15	Diagnostic: Atomic Structure
CI0.16	Diagnostic: The Periodic Table
CH0.003	Diagnostic: Chemical Equations
CI0.17	Diagnostic: Quantitative Chemistry
CH0.010	Diagnostic: Ionic Substances
CH0.012	Diagnostic: Covalent Bonding
CH0.013	Diagnostic: Small & Giant Covalent Substances
CI0.18	Diagnostic: Carbon Allotropes
CI0.19	Diagnostic: Writing Formula Equations
CI0.20	Diagnostic: The Periodic Table: Groups
CI0.21	Diagnostic: Earth & Atmosphere
CI0.22	Diagnostic: Reactions
CI0.23	Diagnostic: The pH Scale
CI0.24	Diagnostic: Anions & Cations
CI0.25	Diagnostic: Chemical Energy
CI0.26	Diagnostic: Specific Heat Capacity
CI0.27	Diagnostic: Energy Changes
CI0.28	Diagnostic: Rates of Reaction
CI0.29	Diagnostic: Hydrocarbons
CI0.30	Diagnostic: Organic Chemistry

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Topic 1 a - Principles of Chemistry	PH3.01	Fundamental States of Matter: Characteristics
	PH3.02	Fundamental States of Matter: Particle Model
	PH3.20	Phase Transitions
	PH3.21	Phase Transitions: Particle Model
	PH3.22	Evaporation vs Boiling
	PH3.23	Physical vs Chemical Changes: The Particle Model
	PH3.24	Phase Transitions: Melting & Boiling Points
	CH1.22	Pure Substances & Mixtures
	CH1.23	Separating Mixtures
	CH1.24	Keywords Relating to Solutions
	CH1.25	Filtration
	CH1.26	Evaporation
	CH1.27	Crystallisation
	CH1.28	Required Practical 13: Simple Distillation
	CH1.29	Fractional Distillation
	CH1.30	Paper Chromatography
	SP2.08	Chromatography Practical
	CH1.31	Which Separation Technique?
	CH1.01	Atoms, Elements, Compounds & Molecules
	CH1.02	Element Symbols
	CH1.03	Names & Symbols of the First 20 Elements
	CH1.08	Atomic Structure
	CH1.10	Atomic Number & Mass Number
	CH1.11	Isotopes
	CH1.12	What is Relative? Mass & Charges
	CH1.13	Calculating Relative Atomic Mass
	CH1.14	Electronic Structure
	CH1.41	The Periodic Table
	CH1.47	The Periodic Table: Metals & Non-metals
	CH1.46	Forming Ions
	CH1.48	Common Ions
	CH1.49	Identifying Atoms & Ions from Electronic Structure
	CH1.50	The Periodic Table: Group 0
	CH1.04	Formulae for Elemental Molecules & Compounds
	CH1.05	Formulae for Compounds with Brackets
	CH1.06	Naming Compounds
	CH1.07	State Symbols
	CH1.16	Chemical Reactions
	CH1.17	Writing Word Equations
	CH1.18	Writing Simple Formula Equations
	CH1.19	Balancing Chemical Equations I
	CH1.20	Balancing Chemical Equations II
	CK7.03	Relative Formula Mass
	CHH8.01	Mole: Mass and Molar Mass
	CHH8.02	Avogadro's Constant & Mole
	CHH8.03	Stoichiometry & Limiting Reactants
	CK7.05	Percentage Yield
	CK7.06	Atom Economy
	CHH3.01	Chemical Formulae & Empirical Formulae

Strand	Code	Nugget Name
Topic 1 b - Bonding	CH2.10	Ionic Bonding I
	CH2.11	Ionic Bonding II
	CH2.12	Predicting Formulae from Ions I
	CH2.18	Ionic Compounds
	CH2.19	Representing Ionic Compounds
	CH2.20	Limitations of Representations of Ionic Compounds
	CH2.21	Properties of Ionic Compounds
	CH2.22	Explaining the Properties of Ionic Compounds
	CH2.23	Deducing Formulae from Diagrams of Ionic Compounds
	CH2.24	Covalent Bonding I
	CH2.25	Covalent Bonding II
	CH2.26	Representing Covalent Bonds
	CH2.27	Limitations of Representations of Covalent Bonds
	CH2.28	Deducing Formulae from Diagrams of Covalent Compounds
	CH2.29	Intermolecular & Intramolecular Forces
	CH2.30	Small Molecular Substances
	CH2.31	Properties of Small Molecular Substances
	CH2.32	Explaining the Properties of Small Molecular Substances
	CH2.33	Giant Covalent Structures & Their Properties
	CH2.34	Comparing Small & Giant Covalent Substances
	CH2.40	Structure & Properties of Diamond
	CH2.41	Explaining the Properties of Diamond
	CH2.42	Structure & Properties of Graphite
	CH2.43	Explaining the Properties of Graphite
	CH2.44	Comparing Graphite & Diamond
	CH2.48	Structure & Properties of Fullerenes

Strand	Code	Nugget Name
Topic 1 b - Bonding	CH2.49	Explaining the Properties of Fullerenes
	CH2.51	Molecular Compounds vs Ionic Compounds
	CH2.57	Valency & Number of Covalent Bonds Formed
	CH2.58	Writing Balanced Formula Equations I
	CH2.59	Writing Balanced Formula Equations II
	CH2.61	What is a Crystal?
Topic 2: Inorganic Chemistry	CH1.51	The Periodic Table: Group 1
	CH1.52	The Periodic Table: Group 7
	CH1.53	The Periodic Table: Explaining Trends in Reactivity
	CHH10.01	Earth's Atmosphere: Formation and Development
	CK6.05	Combustion
	CK6.06	Thermal Decomposition
	CHH10.02	Greenhouse Effect and Climate Change
	CHH10.03	Effects of Common Air Pollutants
	CK9.01	Reactivity Series
	CK9.03	Displacement Reactions
	CHH9.03	Corrosion: Process & Prevention
	CHH3.07	Redox Reactions
	CK8.05	Acids and Metals
	CK8.06	Acids and Metal Oxides
	CK8.07	Acids and Metal Hydroxides
	CK8.08	Acids and Metal Carbonates
	CK8.03	Indicators
	CHH3.04	The pH Scale & Neutralisation
	CK8.02	Concentration and Strength
	CI7.10	Solubility

Strand	Code	Nugget Name
Topic 2: Inorganic Chemistry	SP2.06	Making Salts
	CHH3.03	Testing for Gases
	SP2.09	Identifying Cations: Flame Tests Practical
	SP2.10	Identifying Cations: Precipitate Tests Practical
	CHH7.06	Tests for Anions
	CHH10.04	Potable Water & Purification
	SP2.17	Analysis and purification of water samples
Topic 3: Physical Chemistry	CK11.01	Exothermic Reactions
	CK11.02	Endothermic Reactions
	CK11.03	Reaction Profiles
	CK11.04	Energy During State Changes
	PH1.40	Specific Heat Capacity
	PH1.41	Using the Specific Heat Capacity Equation I
	PH1.42	Using the Specific Heat Capacity Equation II
	PH1.43	Rearranging the Specific Heat Capacity Equation
	CI4.04	Calorimetry (Combustion)
	CI4.05	Calorimetry (Solutions)
	SP2.14	Temperature Change in Combustion
	SP2.15	Temperature Change in Exothermic Reactions
	CK10.01	Rates of Reaction
	CK10.02	Factors Affecting the Rate of Reaction
	CK10.03	Collision Theory
	CK10.04	Measuring Rate of Reaction
	CHH5.03	Rate of Reaction: The Effect of Catalysts
	SP2.03	Rates of Reaction: Surface Area (HCl and Marble)
	SP2.04	Rates of Reaction: Temperature (HCl and Mg)

Strand	Code	Nugget Name
Topic 3: Physical Chem-istry	SP2.05	Rates of Reaction: Concentration (Cross Method)
	CHH5.04	Reversible Reactions & Dynamic Equilibrium
Topic 4: Organic Chemistry	CK14.01	Hydrocarbons
	CHH9.04	Fractional Distillation of Crude Oil
	CK14.03	Cracking of Crude Oil
	CHH6.01	Organic Reactions: Alkanes
	CHH6.02	Organic Reactions: Alkenes
	CHH6.05	Addition Polymerisation
	CHH6.06	Condensation Polymerisation

Course Content

Science Double Award IGCSE: Edexcel – Physics

Diagnostics 25 **Strands** 9 **Nuggets** 166

This course is an alternative version of our GCSE course rearranged in the format of the Edexcel IGCSE with some supplementary nuggets covering the additional content. You can edit this course to match your specification.

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	25
Topic 1:Forces and Motion	21
Topic 2: Electricity	53
Topic 3: Waves	12
Topic 4: Energy Resources & Energy Transfers	45
Topic 5: Solid, Liquid & Gases	11
Topic 6: Magnetism & Electromagnetism	10
Topic 7: Radioactivity	9
Topic 8: Astrophysics	5

Diagnostics

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Code	Nugget Name
PI0.13	Diagnostic: Motion
PI0.14	Diagnostic: Forces
PI0.15	Diagnostic: Introduction to Electricity
PI0.16	Diagnostic: Electrical Charge
PI0.17	Diagnostic: Potential Difference
PI0.18	Diagnostic: Series & Parallel Circuits
PI0.19	Diagnostic: Ohmic & Non-ohmic Conductors
PI0.33	Diagnostic: Mains Electricity
PI0.34	Diagnostic: Power & Electrical Circuits I
PI0.35	Diagnostic: Power & Electrical Circuits II
PI0.35	Diagnostic: Power & Electrical Circuits III
PI0.20	Diagnostic: Waves in Matter
PI0.21	Diagnostic: Electromagnetic Waves
PI0.22	Diagnostic: Energy & Energy Stores
PI0.23	Diagnostic: Calculating Energy Transfers I
PI0.24	Diagnostic: Calculating Energy Transfers II
PI0.25	Diagnostic: Calculating Energy Transfers III
PI0.35	Diagnostic: Energy Transfers & Efficiency
PI0.26	Diagnostic: Power
PI0.27	Diagnostic: Density
PI0.28	Diagnostic: Pressure
PI0.29	Diagnostic: Magnetism
PI0.30	Diagnostic: Electromagnetism

Code	Nugget Name
PI0.31	Diagnostic: Radioactivity
PI0.32	Diagnostic: Astrophysics

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Strand	Code	Nugget Name
Topic 1:Forces and Motion	PK1.01	Speed
	PI4.01	Speed and Velocity
	PK1.02	Rearranging Speed
	PK1.05	Calculating Acceleration
	PI4.02	Acceleration and Deceleration
	PK1.06	Rearranging the Acceleration Equation
	SP4.07	Acceleration of a Trolley using Ticker Tape
	PI4.03	Motion Graphs: Distance-Time Graphs
	PK1.03	Shapes of Distance-Time Graphs
	PHH4.04	Motion Graphs: Velocity-Time Graphs
	PK1.07	Shapes of Speed-Time Graphs
	PHH3.01	Forces Between Objects: Forces, Vectors and Scalars
	PHH3.03	Resultant Forces & Free Body Diagrams
	PHH4.08	Forces & Motion: Newton's Second Law and Inertial Mass
	PHH3.02	Weight, Mass and Gravitational Field Strength
	PHH4.06	Reaction Time & Stopping Distance
	PHH3.04	Elasticity and Hooke's Law
	SP4.06	Hooke's Law Experiment
	PHH4.09	Forces & Motion: Momentum & Collisions
Topic 1: Forces and Motion	PHH4.10	Impact Forces in Car Crashes
	PHH4.07	Forces Between Objects: Newton's Third Law
Topic 2: Electricity	PH2.02	Conductors & Insulators
	PH2.03	Circuit Symbols
	PH2.05	Conventional Current vs Electron Flow
	PH2.06	Drawing Circuits
	PH2.09	Electrical Charge & Current
	PH2.16	Potential Difference
	PH2.42	Potential Difference in Series & Parallel Circuits
	PH2.56	Choosing a Fuse
	PH2.57	Electricity Supply Safety
	PH2.58	Dangers of Electricity
	PH2.70	Energy Transfers in Everyday Appliances
	PH2.24	Ohm's Law: Resistance & Temperature
	PH2.27	Ohmic Conductors: Fixed Resistors
	PH2.38	Non-ohmic Conductors: LDRs
	PH2.75	Using P=IV to Calculate Power I
	PH2.77	Using P=IV to Calculate Power II
	PH2.76	Using P=IV with Circuit Diagrams I
	PH2.78	Using P=IV with Circuit Diagrams II
	PH2.79	Rearranging P=IV
	PH2.80	Rearranging P=IV with Circuit Diagrams
	PH2.71	Using E=Pt to Calculate Energy I
	PH2.72	Using E=Pt to Calculate Energy II
	PH2.73	Rearranging E=Pt
	PH2.49	AC vs DC

Strand	Code	Nugget Name
Topic 2: Electricity	PH2.50	UK Electricity Supply
	PH2.55	Wiring a Plug: Type G/UK
	PH2.04	Series & Parallel Circuits
	PH2.46	Series & Parallel Circuit Comparisons
	PH2.33	Non-ohmic Conductors: Diodes
	PH2.30	Non-ohmic Conductors: Filament Bulbs
	PH2.36	Non-ohmic Conductors: Thermistors
	PH2.17	Resistance
	PH2.43	Resistance in Series & Parallel Circuits
	PH2.41	Current in Series & Parallel Circuits
	PH2.18	Using V=IR to Calculate pd I
	PH2.20	Using V=IR to Calculate pd II
	PH2.19	Using V=IR with Circuit Diagrams I
	PH2.21	Using V=IR with Circuit Diagrams II
	PH2.22	Rearranging V=IR
	PH2.23	Rearranging V=IR with Circuit Diagrams
	PH2.47	Circuit Problem Solving with V=IR Equation I
	PH2.10	Using Q=It to Calculate Charge I
	PH2.12	Using Q=It to Calculate Charge II
	PH2.11	Using Q=It with Circuit Diagrams I
	PH2.13	Using Q=It with Circuit Diagrams II
	PH2.14	Rearranging Q=It
	PH2.15	Rearranging Q=It with Circuit Diagrams
	PH2.64	Using E=QV to Calculate Energy I
	PH2.66	Using E=QV to Calculate Energy II
	PH2.65	Using E=QV with Circuit Diagrams I
Topic 2: Electricity	PH2.67	Using E=QV with Circuit Diagrams II
	PH2.68	Rearranging E=QV
	PH2.69	Rearranging E=QV with Circuit Diagrams
Topic 3: Waves	PK14.01	Introduction to Waves
	PHH5.01	Features of Waves
	PHH5.02	Transverse and Longitudinal Waves
	PHH5.03	Waves: Measuring Speed
	PHH5.04	Waves: Reflection, Refraction, Transmission & Absorption
	PK7.09	Radiation and Absorption Experiment
	PHH6.01	Electromagnetic Waves
	PHH6.02	Uses of Electromagnetic Waves
	PHH6.06	Visible Light
	PI6.03	Refraction
	SP4.18	Reflection and Refraction of Light
	PI6.04	Total Internal Reflection
Topic 4: Energy Resources & Energy Transfers	PH1.01	Energy Stores
	PH1.02	Systems in Physics
	PH1.03	Changing Energy Stores
	PH1.04	Energy Pathways
	PH1.05	Energy Pathways in a System
	PH1.06	Using W=Fd to Calculate Work I
	PH1.07	Using W=Fd to Calculate Work II
	PH1.08	Rearranging the W=Fd Equation
	PH1.09	Using $E=\frac{1}{2}mv^2$ to Calculate Kinetic Energy I
	PH1.10	Using $E=\frac{1}{2}mv^2$ to Calculate Kinetic Energy II
	PH1.11	Rearranging the $E=\frac{1}{2}mv^2$ Equation I

Strand	Code	Nugget Name
Topic 4: Energy Resources & Energy Transfers	PH1.13	Using E=mgh to Calculate Gravitational Potential Energy I
	PH1.14	Using E=mgh to Calculate Gravitational Potential Energy II
	PH1.15	Rearranging the E=mgh Equation I
	PH1.16	Rearranging the E=mgh Equation II
	PH1.17	Rearranging the E=mgh Equation III
	PH1.18	Energy Transfers: KE to GPE
	PH1.19	Calculating Energy Transfers: KE to GPE
	PH1.21	Using $E=\frac{1}{2}ke^2$ to Calculate Elastic Potential Energy I
	PH1.22	Using $E=\frac{1}{2}ke^2$ to Calculate Elastic Potential Energy II
	PH1.23	Rearranging the $E=\frac{1}{2}ke^2$ Equation I
	PH1.25	Energy Transfers: KE to EPE
	PH1.26	Calculating Energy Transfers: KE to EPE
	PH1.27	Calculating Energy Transfers: A Bouncing Ball I
	PH1.28	Calculating Energy Transfers: A Bouncing Ball II
	PH1.59	Calculating Efficiency I
	PH1.60	Calculating Efficiency II
	PH1.61	Rearranging the Efficiency Equation
	PH1.62	Energy Dissipation
	PH1.63	How to Draw a Sankey Diagram
	PH1.37	Thermal Energy & Temperature
	PH1.48	Energy Transfers by Heating: Conduction
	PH1.49	Energy Transfers by Heating: Convection
	PH1.50	Energy Transfers by Heating: Radiation
	PHH6.07	Infrared Radiation and Black Body Radiation
	PHH2.08	Heating and Insulating Buildings
	PHH2.01	Work Done

Strand	Code	Nugget Name
Topic 4: Energy Resources & Energy Transfers	PH1.30	Power
	PH1.31	Using P=E/t to Calculate Power I
	PH1.32	Using P=E/t to Calculate Power II
	PH1.33	Rearranging the P=E/t Equation
	PH1.34	Using P=W/t to Calculate Power I
	PH1.35	Using P=W/t to Calculate Power II
	PH1.36	Rearranging the P=W/t Equation
	PH1.56	Reducing Unwanted Energy Transfers: Vacuum Flask
Topic 5: Solid, Liquid & Gases	PH3.03	Density
	PH3.04	Density of Fundamental States of Matter
	SP4.04	Finding the Density of Solids
	SP4.05	Finding the Density of Liquids
	PK6.01	Introduction to Pressure
	PK6.02	Pressure in Solids
	PK6.03	Rearranging Pressure
	PK6.04	Pressure in a Liquid
	PK6.07	Atmospheric Pressure
	PK6.08	How does Pressure change with Depth and Height?
	PK6.10	How does Pressure change with Volume?
Topic 6: Magnetism & Electromagnetism	PK11.01	Magnetic Materials
	PK11.02	Permanent and Induced Magnets
	PK11.04	Attraction and Repulsion of Magnets
	PK11.05	Magnetic Fields around a Bar Magnet
	PK11.06	Electromagnets
	PHH11.04	Uses of Electromagnets
	PHH11.05	The Motor Effect and Fleming's Left Hand Rule

Strand	Code	Nugget Name
Topic 6: Magnetism & Electromagnetism	PHH11.06	The Motor Effect: Forces and Magnetic Flux Density
	PK11.12	Uses of Electromagnets: Motor
	PHH11.07	Induced Potential: Alternators and Dynamos
Topic 7: Radioactivity	PHH7.01	The Atomic Model
	PHH7.02	Atoms, Isotopes and Ions
	PHH7.03	Radioactive Decay: Types of Radiation
	PHH7.04	Radioactive Decay: Nuclear Equations
	PHH7.05	Background Radiation
	PHH7.06	Half Life
	PHH7.07	Uses and Risks of Nuclear Radiation
	PHH7.08	Nuclear Fission
	PHH7.09	Nuclear Fusion
Topic 8: Astrophysics	PHH9.04	The Solar System
	PK17.04	Structure of the Solar System
	PHH9.01	Orbits
	PHH9.03	The Life Cycle of Stars
	PK17.05	Structure of the Universe

Course Content

Science ELC+ – AQA

Diagnostics 60 **Strands** 7 **Nuggets** 319

This course is mapped to the AQA ELC (Double Award) and is planned for use with students also sitting an AQA Combined Science GCSE.
AQA: 5960
QAN: 601/7522/9

Strands

A strand is a sequence of nuggets grouped by theme or topic, forming a high-level organisation of content within a course.

Strand	No. of nuggets
Diagnostics	60
Biology: The Human Body	79
Biology: Environment, evolution and inheritance	71
Chemistry: Elements, mixtures and compounds	49
Chemistry: Chemistry in our world	42
Physics: Energy, forces and the structure of matter	46
Physics: Electricity, magnetism and waves	32

Diagnostics

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

Code	Nugget Name
SE0.01	Component 1: Outcome 1
SE0.02	Component 1: Outcome 2
SE0.03	Component 1: Outcome 3
SE0.04	Component 1: Outcome 4
SE0.05	Component 1: Outcome 5
SE0.06	Component 1: Outcome 6
SE0.07	Component 1: Outcome 7
SE0.08	Component 1: Outcome 8
SE0.09	Component 1: Outcome 9
SE0.10	Component 1: Outcome 10
SE0.11	Component 2: Outcome 1
SE0.12	Component 2: Outcome 2
SE0.13	Component 2: Outcome 3
SE0.14	Component 2: Outcome 4
SE0.15	Component 2: Outcome 5
SE0.16	Component 2: Outcome 6
SE0.17	Component 2: Outcome 7
SE0.18	Component 2: Outcome 8
SE0.19	Component 2: Outcome 9
SE0.20	Component 2: Outcome 10
SE0.21	Component 3: Outcome 1
SE0.22	Component 3: Outcome 2

Code	Nugget Name
SE0.23	Component 3: Outcome 3
SE0.24	Component 3: Outcome 4
SE0.25	Component 3: Outcome 5
SE0.26	Component 3: Outcome 6
SE0.27	Component 3: Outcome 7
SE0.28	Component 3: Outcome 8
SE0.29	Component 3: Outcome 9
SE0.30	Component 3: Outcome 10
SE0.31	Component 4: Outcome 1
SE0.32	Component 4: Outcome 2
SE0.33	Component 4: Outcome 3
SE0.34	Component 4: Outcome 4
SE0.35	Component 4: Outcome 5
SE0.36	Component 4: Outcome 6
SE0.37	Component 4: Outcome 7
SE0.38	Component 4: Outcome 8
SE0.39	Component 4: Outcome 9
SE0.40	Component 4: Outcome 10
SE0.41	Component 5: Outcome 1
SE0.42	Component 5: Outcome 2
SE0.43	Component 5: Outcome 3
SE0.44	Component 5: Outcome 4
SE0.45	Component 5: Outcome 5
SE0.46	Component 5: Outcome 6
SE0.47	Component 5: Outcome 7

Code	Nugget Name
SE0.48	Component 5: Outcome 8
SE0.49	Component 5: Outcome 9
SE0.50	Component 5: Outcome 10
SE0.51	Component 6: Outcome 1
SE0.52	Component 6: Outcome 2
SE0.53	Component 6: Outcome 3
SE0.54	Component 6: Outcome 4
SE0.55	Component 6: Outcome 5
SE0.56	Component 6: Outcome 6
SE0.57	Component 6: Outcome 7
SE0.58	Component 6: Outcome 8
SE0.59	Component 6: Outcome 9
SE0.60	Component 6: Outcome 10

Nuggets

A nugget is a micro-lesson that contains learning material followed by questions to assess learning.

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
What is the body made up of?	3.1.1	1	1	Biology: The Human Body	Component 1: Outcome 1 [SE0.01]	BI1.02	Animal Cells	Identify the sub-cellular structures of animal cells and give their functions.	✓	4.1.1.2
	3.1.1	1	1			BI1.03	Plant Cells	Identify the sub-cellular structures of plant cells and give their functions.	✓	4.1.1.2
	3.1.1	1	1			BI1.04	Comparing Animal & Plant Cells	Compare the structure of animal and plant cells and give the functions of the organelles.	✓	4.1.1.2
	3.1.1	1	1			BK1.04	Using Microscopes	Describe the developments in microscopy techniques over time and explain how electron microscopy has increased understanding of cells.		4.1.1.5
	3.1.1	1	1			BI1.16	Explaining the Structure of Specialised Animal Cells	Explain how specialised cells in animals are adapted for their functions.	✓	4.1.1.3
	3.1.1	1	1			BI1.60	Describing the Structure of Specialised Animal Cells	Give examples of specialised cells in animals and describe their features.	✓	4.1.1.3
	3.1.1	1	2		Component 1: Outcome 2 [SE0.02]	BI2.01	Animal Tissues	Give a definition of a tissue and some examples from animals.	✓	4.2.1
	3.1.1	1	2			BI2.02	Human Organs	Give a definition of an organ, identify some examples from humans and give their functions.	✓	4.2.1
	3.1.1	1	2			BI2.03	Human Organ Systems	Give a definition of an organ system, identify some examples from humans and give their functions.	✓	4.2.1
	3.1.1	1	2			BI2.40	The Circulatory System	Describe the double circulatory system and the structure and function of the blood.	✓	4.2.2.2
	3.1.1	1	2			BI2.41	Structure of the Heart	Identify the blood vessels and chambers of the heart.	✓	4.2.2.2
	3.1.1	1	2			BI2.42	Function of the Heart	Describe blood flow in the heart and the function of each structure.	✓	4.2.2.2

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
What is the body made up of?	3.1.1	1	2	Biology: The Human Body	Component 1: Outcome 2 [SE0.02]	BI2.49	Blood Components & Their Functions	Identify the components of blood and list their functions.	✓	4.2.2.3
	3.1.1	1	2			BI2.50	The Structure of Blood Components	Describe the structure of components of blood.	✓	4.2.2.3
	3.1.1	1	2			BI2.51	Explaining the Structure of Blood Components	Explain how components of blood are adaptated for their functions.	✓	4.2.2.3
	3.1.1	1	3		Component 1: Outcome 3 [SE0.03]	BI2.04	The Human Digestive System	Describe how several organs work together to digest and absorb food.	✓	4.2.2.1
	3.1.1	1	3			BI2.05	The Functions of the Digestive Organs	Describe the functions of the organs in the digestive system.	✓	4.2.2.1
	3.1.1	1	3			BI2.10	Enzymes: Structure & Function	Describe the structure of enzymes and the lock and key model.	✓	4.2.2.1
	3.1.1	1	3			BI2.12	Enzymes: Factors Affecting Activity	State that temperature and pH affect the rate of an enzyme catalysed reaction.	✓	4.2.2.1
	3.1.1	1	3			BI2.26	Required Practical 4: Effect of pH on Amylase - Method	Investigate the effect of pH on the rate of reaction of amylase.	✓	4.2.2.1
	3.1.1	1	3			BI2.27	Required Practical 4: Effect of pH on Amylase - Analysis & Concl.	Investigate the effect of pH on the rate of reaction of amylase.	✓	4.2.2.1
How the body works.	3.1.2	1	4		Component 1: Outcome 4 [SE0.04]	BI2.34	The Human Gas Exchange System	Describe the structure and function of the human gas exchange system.	✓	4.2.2.2
	3.1.2	1	4			BI2.35	Mechanics of Breathing	Explain the mechanical process of breathing and model breathing using a bell jar.	✓	4.2.2.2
	3.1.2	1	4			BI2.36	How Lungs are Adapted for Gas Exchange	Describe the structure and function of the human gas exchange system.	✓	4.2.2.2

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How the body works.	3.1.2	1	4	Biology: The Human Body	Component 1: Outcome 4 [SE0.04]	BI2.44	Measuring Heart Rate	Describe what causes a pulse and show how it can be used the measure pulse/heart rate.	✓	4.2.2.2
	3.1.2	1	4			BI2.54	Health & Disease	Define health, disease, communicable disease and non-communicable disease. Give examples of factors that affect health.	✓	4.2.2.5
	3.1.2	1	4			BI2.55	Risk Factors & Causal Mechanisms	Define risk factor, causal mechanism, causation and correlation. Give some general examples.	✓	4.2.2.6
	3.1.2	1	4			BI2.58	Smoking & Disease	Describe the effect of smoking on the incidence of non-communicable disease.	✓	4.2.2.6
	3.1.2	1	4			BI2.59	Alcohol & Disease	Describe the effect of drinking alcohol on the incidence of non-communicable disease.	✓	4.2.2.6
	3.1.2	1	4			BI2.06	Healthy Diet	Describe the main components of a healthy human diet and explain why these components are needed.	✓	4.2.2.1
	3.1.2	1	4			BI2.60	Diet, Exercise, Obesity & Disease	Describe the effect of diet, exercise and obesity on the incidence of non-communicable disease.	✓	4.2.2.6
	3.1.2	1	4			BI4.40	Effect of Exercise on the Body	Describe skeletal muscle and how the body responds to exercise.	✓	4.4.2.2
	3.1.2	1	4			BI5.038	Diabetes: Type 2	Describe type 2 diabetes, its causes, onset & treatments.	✓	4.5.3.2
	3.1.2	1	4			BI4.28	Introduction to Respiration	State that all the energy needed for life processes is transferred by respiration. Describe respiration as the breakdown of organic molecules.	✓	4.4.2.1
	3.1.2	1	4			BI4.29	Aerobic Respiration: Word Equation	Describe aerobic respiration and give the word equation.	✓	4.4.2.1

ELC				CENTURY					Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How the body fights disease.	3.1.3	1	5	Biology: The Human Body	Component 1: Outcome 5 [SE0.05]	BI3.01	Introduction to Pathogens	Define 'pathogen', give viruses, bacteria, protists and fungi as examples of pathogens and identify them from images or diagrams.	✓	Prior
	3.1.3	1	5			BI1.05	Bacterial Cells	Identify the sub-cellular structures of bacterial cells and give their functions.	✓	4.1.1.1
	3.1.3	1	5			BI3.09	Viruses	Describe viruses and give some common examples.	✓	4.3.1.1
	3.1.3	1	5			BI3.13	Fungi	Describe fungi and give some common examples.	✓	Supplementary
	3.1.3	1	5			BI3.15	Protists	Describe protists and give some common examples.	✓	
	3.1.3	1	6		Component 1: Outcome 6 [SE0.06]	BI3.21	The Immune System	Describe phagocytosis, antibody production and antitoxin production.	✓	4.3.1.6
	3.1.3	1	6			BI3.22	Antigens, Antibodies & Immunity	Define antigen & antibody. Describe the specific nature of antibodies, the 'memory' of the immune system and the primary and secondary immune responses.	✓	4.3.1.6
	3.1.3	1	6			BI3.23	Vaccinations: Traditional Vaccines	Describe vaccines that contain attenuated pathogens or parts of pathogens and explain how they work. Describe the primary and secondary immune response and how this applies to vaccination programs.	✓	4.3.1.7
	3.1.3	1	7		Component 1: Outcome 7 [SE0.07]	BI3.27	Vaccinations: Misconceptions	Describe some common misconceptions regarding vaccines and explain the science behind the corrections.	✓	4.3.1.7
	3.1.3	1	7			BI3.28	Medical Drugs: Painkillers	Give definitions of medical drugs and painkiller. Identify when painkillers might be used and what they can/cannot treat.	✓	4.3.1.8
	3.1.3	1	7			BI3.29	Medical Drugs: Antibiotics	Give definitions of medical drugs and antibiotic. Identify when antibiotics might be used and what they can/cannot treat.	✓	4.3.1.8
	3.1.3	1	7			BI3.30	Medical Drugs: Other Antimicrobial	Give definitions of antimicrobial, antiseptic, disinfectant, antiviral, antifungal, fungicide and antiparasitic. Identify when they might be used and what they can/cannot treat.	✓	4.3.1.8

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How the body fights disease.	3.1.3	1	7	Biology: The Human Body	Component 1: Outcome 7 [SE0.07]	BI3.31	Medical Drugs: Summary	Give definitions of medical drug, painkiller, antimicrobial, antiseptic, disinfectant, antibiotic, antiviral, antifungal, fungicide and antiparasitic. Identify when they might be used and what they can/cannot treat.	✓	4.3.1.8
	3.1.3	1	7			BI3.32	Developing Drugs: Discovery	Define and give examples of a medical drug. Define drug discovery as the first stage of the drug development process. Compare traditional discovery to how drugs are discovered now. Describe how aspirin, digitalis and penicillin were discovered and how they work.	✓	4.3.1.9
	3.1.3	1	7			BI3.33	Developing Drugs: Key Words	Define the key words relating to all stages of drug development.	✓	4.3.1.9
	3.1.3	1	7			BI3.34	Developing Drugs: Preclinical Trials	State when preclincial trials occur in the drug development process. Describe how long preclinical trials last and how many drugs are tested. State reasons for and against testing on animals.	✓	4.3.1.9
	3.1.3	1	7			BI3.35	Developing Drugs: Clinical Trials - Phase 1	State when clinical trials occur in the drug development process. Describe how long clinical trials last and how many drugs are tested. State which participants are tested and the main purpose of phase 1 trials. Explain why testing is carried out on healthy volunteers.	✓	4.3.1.9
	3.1.3	1	7			BI3.36	Developing Drugs: Clinical Trials - Phase 2	State when clinical trials occur in the drug development process. State which participants are tested and the main purpose of phase 2 trials. Explain how patients and scientists can show bias. Describe and explain why phase 2 trials are randomised, double blind and placebo-controlled.	✓	4.3.1.9
	3.1.3	1	7			BI3.37	Developing Drugs: Clinical Trials - Phase 3	State when clinical trials occur in the drug development process. Describe how long clinical trials last and how many drugs are tested. State which participants are tested and the main purpose of phase 3 trials. Explain how patients and scientists can show bias. Describe and explain why phase 3 trials are randomised, double blind and placebo-controlled. Explain the ethics of using a placebo.	✓	4.3.1.9
	3.1.3	1	7			BI3.38	Developing Drugs: Peer Review	State when peer review occurs in the drug development process. Explain why peer review is needed. Define false claims, and validity. Define and explain the reason for single-blind and double-blind peer reviews. Describe the function of regulatory authorities.	✓	4.3.1.10
	3.1.3	1	7			BI3.39	Developing Drugs: Post-Marketing Surveillance	Recall the role of regulatory authorities. Explain why phase 4 / post-marketing surveillance is required. Describe the participants involved, the length of the study and why that is important. Define efficacy and toxicity.	✓	4.3.1.9
	3.1.3	1	7			BI3.40	Developing Drugs: Summary	Describe and give reasons for each stage of the drug development process, including phase 4 / post-marketing surveillance. Provide an argument for and against testing on and describe limitations of testing on human cells and tissues. Define key words, such as efficacy, toxicity, bias, placebo and false claims.	✓	4.3.1.9

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How the Body is Coordinated.	3.1.4	1	8	Biology: The Human Body	Component 1: Outcome 8 [SE0.08]	BI5.009	Nervous System: Introduction	An introduction to the nervous system, its structure and function.	✓	4.5.2.1
	3.1.4	1	8			BI5.010	Nervous System: Neurones & Nerve	Describe, explain and compare the structure and function of sensory, motor and relay neurones.	✓	4.5.2.1
	3.1.4	1	8			BI5.011	Nervous System: Synapses	Describe a synapse and the role of neurotransmitters.	✓	4.5.2.1
	3.1.4	1	8			BI5.012	Nervous System: Reflexes	Describe a reflex arc and give examples of a reflex action.	✓	4.5.2.1
	3.1.4	1	8			BI5.013	Required Practical 6: Reaction Time	Investigate the effect of caffeine on reaction time using the 'ruler drop' test.	✓	RP 6
	3.1.4	1	8			BI5.027	Endocrine System: Introduction	Define and describe hormones, glands and target organs.	✓	4.5.3.1
	3.1.4	1	9		Component 1: Outcome 9 [SE0.09]	BI5.028	Endocrine System: Glands	Describe the location & function of the major glands in the endocrine system.	✓	4.5.3.1
	3.1.4	1	9			BI5.056	Human Life Cycle	List the human life stages and when they occur.	✓	Prior
	3.1.4	1	9			BI5.057	Puberty	Describe the development of secondary sex characteristics during puberty.	✓	4.5.3.3
	3.1.4	1	9			BI5.058	Menstrual Cycle	Describes the stages of the menstrual cycle.	✓	4.5.3.3
	3.1.4	1	10		Component 1: Outcome 10 [SE0.10]	BI6.009	Fertilisation & Development of the Animal Embryo	Explain what happens to the chromosome number during fertilisation. Describe what happens after fertilisation to form an embryo.	✓	4.6.1.2
	3.1.4	1	10			BI5.063	Contraception: Introduction	Describe fertilisation and the ways contraception aims to prevent it. Does not include individual methods of contraception.	✓	4.5.3.4

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How the Body is Coordinated.	3.1.4	1	10	Biology: The Human Body	Component 1: Outcome 10 [SEO.10]	BI5.064	Contraception: Barrier Methods	Describe the use of internal/external condoms and diaphragms. Give their advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.065	Contraception: Oral Contraceptives	Describe the use of the combined pill and the progesterone only pill. Give their advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.067	Contraception: Contraceptive Patch	Describe the use of the contraceptive patch. Give its advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.069	Contraception: Long Acting Reversible Methods	Describe the use of the contraceptive injection, the contraceptive implant, IUD & IUS. Give their advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.071	Contraception: Surgical Methods	Describe surgical methods of contraception. Give their advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.072	Contraception: Emergency Contraception	Describe the use of the emergency contraceptive pills and the IUD as emergency contraception. Give their advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.074	Contraception: Spermicides	Describe the use of the spermicides. Give their advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.075	Contraception: Fertility Awareness & Abstinence	Describe the use of withdrawal, fertility awareness & abstinence as forms of birth control. Give their advantages and disadvantages.	✓	4.5.3.4
	3.1.4	1	10			BI5.076	Contraception: Summary	Describe the use of the combined pill, the progesterone only pill, contraceptive injection, contraceptive implant, contraceptive skin patch, internal condoms, external condoms, diaphragms, IUD, IUS, spermicides, withdrawal, fertility awareness and abstinence as forms of birth control.	✓	4.5.3.4
	3.1.4	1	10			BI5.078	Contraception: Science, Ethics & Opinion	Give some of the arguments for and against the use of contraception. State that ethics cannot be dictated by science alone.	✓	4.5.3.4

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
What are the feeding relationships between living organisms?	3.2.1	2	1	Biology: Environment, evolution and inheritance	Component 2: Outcome 1 [SE0.11]	BI4.01	Introduction to Photosynthesis	State that glucose is a store of chemical energy and why it is important to organisms. Explain the importance of producers.	✓	BI4.01
	3.2.1	2	1			BI4.02	Photosynthesis: Word Equation	Define photosynthesis. State the word equation for photosynthesis.	✓	BI4.02
	3.2.1	2	1			BI4.05	Photosynthesis: How Plants Use Glucose	Describe how plants and algae use the glucose produced during photosynthesis.	✓	BI4.05
	3.2.1	2	1			BI4.07	Rate of Photosynthesis: Introduction	Define the rate of a chemical reaction and the rate of photosynthesis.	✓	BI4.07
	3.2.1	2	1			BI4.16	Required Practical 5: Photosynthesis & Light Intensity	Investigate the effect of light intensity on the rate of photosynthesis using pondweed.	✓	BI4.16
	3.2.1	2	2		Component 2: Outcome 2 [SE0.12]	BI7.001	Types of Ecosystem	Describe a variety of different ecosystems. Define organism, habitat, population, community and ecosystem.	✓	Supple-mentary
	3.2.1	2	2			BI7.002	Roles in Ecosystems	Define the different roles of organisms in an ecosystem.	✓	4.7.1.1
	3.2.1	2	2			BI7.012	Adaptations of Plants	Describe the functional, structural and behavioural adaptations of plants and explain how they help them to survive in different ecosystems.	✓	4.7.1.4
	3.2.1	2	2			BI7.013	Adaptations of Animals	Describe the functional, structural and behavioural adaptations of animals and explain how they help them to survive in different ecosystems.	✓	4.7.1.4
	3.2.1	2	3		Component 2: Outcome 3 [SE0.13]	BI7.009	Interdependence	Explain the importance of the relationships between organisms in an ecosystem.	✓	4.7.1.1
	3.2.1	2	3			BI7.015	Food Chains & Food Webs	Describe feeding relationships in terms of transfer of energy. Use food chains to represent simple feeding relationships in an ecosystem.	✓	4.7.2.1
	3.2.1	2	3			BI7.016	Importance of the Producer	Explain the importance of producers in an ecosystem.	✓	4.7.2.1

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
What are the feeding relationships between living organisms?	3.2.1	2	3	Biology: Environment, evolution and inheritance	Component 2: Outcome 3 [SE0.13]	BI7.017	Predator/Prey Cycles: Describing Data	Describe the changes in populations based on the relationship between the predator and its prey.	✓	4.7.2.1
	3.2.1	2	4		Component 2: Outcome 4 [SE0.14]	BI7.027	Cycling in Ecosystems	Explain the importance of cycling in ecosystems. State the three main cycles.	✓	4.7.2.2
	3.2.1	2	4			BI7.028	The Carbon Cycle	Describe the processes of the carbon cycle.	✓	4.7.2.2
	3.2.1	2	4			BI7.030	The Decay Cycle	Describe the processes of the decay cycle.	✓	4.7.2.2
	3.2.2	2	5		Component 2: Outcome 5 [SE0.15]	BI7.010	Competition Between Plants	Describe the factors that plants compete for within an ecosystem.	✓	4.7.1.1
	3.2.2	2	5			BI7.011	Competition Between Animals	Describe the factors that animals compete for within an ecosystem.	✓	4.7.1.1
	3.2.2	2	6		Component 2: Outcome 6 [SE0.16]	BI6.097	Extinction	Give the definition of extinction. Describe factors which may contribute to the extinction of a species.	✓	4.6.3.3
	3.2.2	2	6			BI7.003	Biotic Factors	Define a biotic factor. Identify biotic factors. Describe the impact of changing biotic factors.	✓	4.7.1.3
	3.2.2	2	6			BI7.004	Biotic Factors: Describing Data	Describe patterns in data represented in tables and graphs.	✓	4.7.1.3
	3.2.2	2	6			BI7.006	Abiotic Factors	Define an abiotic factor. Identify abiotic factors. Describe the impact of changing abiotic factors.	✓	4.7.1.2
	3.2.2	2	6			BI7.007	Abiotic Factors: Describing Data	Describe the patterns shown by data in tables and different types of graphs.	✓	4.7.1.2
	3.2.2	2	6			BI7.019	Investigating Ecosystems: Quadrats	Describe the different types of quadrats and their uses. Explain the importance of random sampling and sample size.	✓	RPA 7/7.2.1

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
What determines where particular species live?	3.2.2	2	6	Biology: Environment, evolution and inheritance	Component 2: Outcome 6 [SE0.16]	BI7.022	Investigating Ecosystems: Transects	Describe the use and purpose of a transect line sample.	✓	RPA 7/7.2.1
	3.2.2	2	7		Component 2: Outcome 7 [SE0.17]	BI7.044	Human Impacts: Introduction	Explain how human activities are having an impact on ecosystems.	✓	4.7.3.2 4.7.3.3 4.7.3.4
	3.2.2	2	7			BI7.045	Human Impacts: Waste Management	Explain the importance of managing the increasing waste from human activities an the biodiversity of the Earth.	✓	4.7.3.2
	3.2.2	2	7			CH9.08	Air Pollution from Fuels	Describe air pollution and pollutants from the combustion of fuels.	✓	4.7.3.2
	3.2.2	2	7			BI7.047	Human Impacts: Water Pollution	Explain how water pollution occurs and the impact it has on biodiversity.	✓	4.7.3.2
	3.2.2	2	7			BI7.048	Human Impacts: Land Pollution	Explain how land pollution occurs and the impact it has on biodiversity.	✓	4.7.3.2 4.7.3.3
	3.2.2	2	7			CH9.09	Pollutants: Carbon Dioxide	Explain the formation and impact of carbon dioxide as a pollutant.	✓	4.7.3.2
	3.2.2	2	7			CH9.10	Pollutants: Sulfur Dioxide	Explain the formation and impact of sulfur dioxide as a pollutant.	✓	4.7.3.2
	3.2.2	2	7			CH9.11	Pollutants: Nitrogen Oxides	Explain the formation and impact of nitrogen oxides as pollutants.	✓	4.7.3.2
	3.2.2	2	7			CH9.12	Pollutants: Particulates	Explain the formation and impact of particulates as pollutants.	✓	4.7.3.2
	3.2.2	2	7			CH9.13	Pollutants: Carbon Monoxide	Explain the formation and impact of carbon monoxide as a pollutant.	✓	4.7.3.2
	3.2.2	2	7			CH9.14	Pollutants: Methane	Explain the formation and impact of methane as a pollutant.	✓	4.7.3.2

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
What determines where particular species live?	3.2.2	2	7	Biology: Environment, evolution and inheritance	Component 2: Outcome 7 [SE0.17]	BI7.049	Pollutants: Fertiliser	Explain the impact of fertiliser as pollutants.	✓	4.7.3.2
	3.2.2	2	7			BI7.050	Pollutants: Industrial Chemicals	Explain the impact of industrial chemicals as pollutants.	✓	4.7.3.2
	3.2.2	2	7			BI7.051	Pollutants: Summary	Summarise the impact of the following pollutants on the environment: carbon dioxide, sulfur dioxide, nitrogen oxide, particulates, carbon monoxide, methane, fertiliser, and industrial chemicals.	✓	4.7.3.2
	3.2.2	2	7			BI7.052	Land Use: Farming	Explain how clearing land for farming impacts the environment.	✓	4.7.3.3
	3.2.2	2	7			BI7.053	Land Use: Building	Explain how clearing land for building impacts the environment.	✓	4.7.3.3
	3.2.2	2	7			BI7.054	Land Use: Quarrying & Mining	Explain how clearing land for quarrying and mining impacts the environment.	✓	4.7.3.3
	3.2.2	2	7			BI7.055	Land Use: Landfill	Explain how clearing land for landfill impacts the environment.	✓	4.7.3.3
	3.2.2	2	7			BI7.056	Land Use: Peat Bog Destruction	Explain how clearing land for peat bog destruction impacts the environment.	✓	4.7.3.3
	3.2.2	2	7			BI7.057	Land Use: Deforestation	Explain how clearing land for deforestation impacts the environment.	✓	4.7.3.3
	3.2.2	2	7			BI7.058	Land Use: Summary	Summarise the impact of farming, building, quarrying, mining, landfill, peat bog destruction and deforestation on the environment.	✓	4.7.3.4
	3.2.2	2	7			CH9.06	Climate Change: Natural Greenhouse Effect	Identify what the greenhouse effect is and describe how it impacts upon our planet.	✓	4.7.3.5

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How life has developed on Earth.	3.2.3	2	8	Biology: Environment, evolution and inheritance	Component 2: Outcome 8 [SE0.18]	BI6.064	Evolution	Give the definion of evolution. State what characteristics are affected by evolution. Describe the evolution of the peppered moth.	✓	4.6.2.2
	3.2.3	2	8			BI6.065	The Process of Natural Selection	Give the definition of natural selection and evolution. Describe the process of natural slection and how it can lead to evolution.	✓	4.6.2.2
	3.2.3	2	8			BI6.071	Selective Breeding	Give the definition of selective breeding. Describe the process of selective breeding and explain, with examples, why humans have carried out selective breeding.	✓	4.6.2.3
	3.2.3	2	8			BI6.073	The Impact of Selective Breeding	Explain the impact of selective breeding of food plants and domesticated animals, including the benefits and risks.	✓	4.6.2.3
	3.2.3	2	8			BI6.091	Evidence for Evolution	State how fossils and the fossil record, the discovery that genes are the heriditary material and anitiobitc resistance all provide evidence for the theory of evolution.	✓	4.6.3.1
	3.2.3	2	8			BI6.093	Early Life on Earth	State when living organisms first appeared on Earth and describe the early life forms that followed.	✓	4.6.3.2
	3.2.3	2	8			BI6.094	Using the Fossil Record	Define the fossil record. Describe ways of using the fossil record. State and explain the reasons why the fossil record is incomplete.	✓	4.6.3.2
	3.2.3	2	8			BI6.098	Examples of Evolution: The Peppered Moth	Describe and explain the evolution of the peppered moth.	✓	4.6.3.1
	3.2.3	2	9		Component 2: Outcome 9 [SE0.19]	BI6.001	Reproduction: Sexual	Describe sexual reproduction. Includes chromosome number, gametes and fertilisation.	✓	4.6.1.1
	3.2.3	2	9			BI6.002	Reproduction: Asexual	Describe asexual reproduction. Includes chromosome number and clones.	✓	4.6.1.1
	3.2.3	2	9			BI6.003	Reproduction: Summary	Describe and compare sexual and asexual reproduction.	✓	4.6.1.1
	3.2.3	2	9			BI6.038	Genetic Diagrams: Genetic Cross Diagrams	Complete genetic cross diagrams. Assumes prior knowledge of alleles, genotypes, phenotypes and zygosity.	✓	4.6.1.6

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How life has developed on Earth.	3.2.3	2	9	Biology: Environment, evolution and inheritance	Component 2: Outcome 9 [SE0.19]	BI6.039	Genetic Diagrams: Interpreting Genetic Cross Diagrams	Extract and interpret information from genetic cross diagrams. Predict the results of a single gene cross using ratios, percentages, fractions and probability.	✓	4.6.1.6
	3.2.3	2	10			BI6.010	Introduction to Genetics	Define genetics. Identify parents and offspring from simple diagrams.	✓	Supplementary
	3.2.3	2	10			BI1.18	Chromosomes	State where chromosomes are found and their arrangement. Define DNA, chromosome and gene. Suitable for Foundation and Higher Tier AQA, Edexcel and OCR Specifications. Combined and Triple Science.	✓	4.1.2.1
	3.2.3	2	10		Component 2: Outcome 10 [SE0.20]	BI6.011	Genome to Genes	Define, describe & identify DNA, genes, chromosomes and genomes.	✓	4.6.1.3
	3.2.3	2	10			BI6.020	Understanding the Human Genome	State that understanding the human genome is important for treating disease and for tracing human migration patterns from the past.	✓	4.6.1.3
	3.2.3	2	10			BI6.022	Genes & Alleles	Define allele and explain the difference between dominant and recessive alleles. Does not include co-dominance.	✓	4.6.1.6
	3.2.3	2	10			BI6.054	Sex Determination in Humans: Introduction	Describe the human sex determination system, identify the most typical male and female genotypes and give typical features.	✓	4.6.1.8
	3.2.3	2	10			BI6.060	Continuous & Discontinuous Variation	Describe and give examples of continuous and discontinuous variation. Compare the two types of variations, including how continuous and discontinuous data are plotted.	✓	4.6.2.1
	3.2.3	2	10			BI6.074	Genetic Engineering	Give the definition of genetic engineering. Give examples of organisms that have been genetically modified and why. Describe the process of genetic engineering.	✓	4.6.2.4
	3.2.3	2	10			BI6.075	GM Crops	Give the definition of genetic engineering. Give examples of crops that have been genetically modified and why.	✓	4.6.2.4
	3.2.3	2	10			BI6.076	Genetic Modification & Inherited Disorders	Define genetic modification and inherited disorders. Give examples of how genetic modification is being used to overcome some inherited disorders.	✓	4.6.2.4
	3.2.3	2	10			BI6.077	The Impact of Genetic Engineering	Give the definition of genetic engineering. Evaluate the positive and negative impacts of genetic engineering, as well as ethical considerations and concerns.	✓	4.6.2.4

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Atoms, elements and compounds	3.3.1	3	1	Chemistry: Elements, mixtures and compounds	Component 3: Outcome 1 [SEO.21]	CH1.01	Atoms, Elements, Compounds & Molecules	An introduction to atoms, elements, compounds and molecules.	✓	5.1.1.1
	3.3.1	3	1			CH1.02	Element Symbols	Use element symbols correctly.	✓	5.1.1.1
	3.3.1	3	1			CH1.03	Names & Symbols of the First 20 Elements	Correctly use the names and symbols of the first 20 elements of the Periodic Table.	✓	5.1.1.1
	3.3.1	3	1			CH1.41	The Periodic Table	Use the modern periodic table.	✓	5.1.2.1
	3.3.1	3	1			CH1.47	The Periodic Table : Metals & Non-metals	Identify metals and non-metals from their position on the periodic table. Describe the properties and behaviour of metals and non-metals.	✓	5.1.2.3
	3.3.1	3	1			CH1.51	The Periodic Table : Group 1	Describe the electronic structure, properties and trends of group 1 elements.	✓	5.1.2.5
	3.3.1	3	1			CH1.52	The Periodic Table : Group 7	Describe the electronic structure, properties and trends of group 7 elements.	✓	5.1.2.6
	3.3.1	3	2		Component 3: Outcome 2 [SEO.22]	CH1.04	Formulae for Elemental Molecules & Compounds	Recall and use the chemical formulae for common elemental molecules and compounds.	✓	5.1.1.1
	3.3.1	3	2			CH1.16	Chemical Reactions	Recognise when a simple chemical reaction has occured and use simple word equations.	✓	5.1.1.1
	3.3.1	3	2			CH1.17	Writing Word Equations	Write and extract information from word equations.	✓	5.1.1.1
	3.3.1	3	2			CH1.18	Writing Simple Formula Equations	Write and extract information from simple formula equations.	✓	5.1.1.1
	3.3.1	3	2			CH2.01	Introducing Chemical Bonds	Describe ionic, covalent and metallic bonds in terms of the transfer/sharing of electrons and in terms of electrostatic forces.	✓	5.1.1.1

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Atoms, elements and compounds	3.3.1	3	2	Chemistry: Elements, mixtures and compounds	Component 3: Outcome 2 [SE0.22]	CH2.10	Ionic Bonding I	Identify and describe the formation of ionic bonds using dot and cross diagrams. This nugget contains 1:1 ratio examples only.	✓	5.2.1.2
	3.3.1	3	2			CH2.24	Covalent Bonding I	Identify and describe the formation of covalent bonds using dot and cross diagrams.	✓	5.2.1.4
How structure affects properties	3.3.2	3	3		Component 3: Outcome 3 [SE0.23]	PH3.01	Fundamental States of Matter: Characteristics	Identify the four fundamental states of matter and their basic properties.	✓	5.2.2.1 5.2.2.2
	3.3.2	3	3			PH3.02	Fundamental States of Matter: Particle Model	Describe the arrangement, movement and the relative energy of particles in the fundamental states of matter using the particle model.	✓	5.2.2.1
	3.3.2	3	3			PH3.20	Phase Transitions	Describe phase transition between the different fundamental states of matter.	✓	Supple-mentary
	3.3.2	3	3			PH3.21	Phase Transitions: Particle Model	Describe the phase transition between the different fundamental states of matter using the particle model.	✓	5.2.2.1
	3.3.2	3	3			PH3.22	Evaporation vs Boiling	Describe and compare the different forms of vaporisation that can occur.	✓	Supplementary
	3.3.2	3	3			PH3.23	Physical vs Chemical Changes: Particle Model	Identify the difference between chemical and physical changes.	✓	
	3.3.2	3	3			PH3.24	Phase Transitions: Melting & Boiling Points	Predict the physical state of a substance under specified conditions, given suitable data.	✓	5.2.2.1
	3.3.2	3	4		Component 3: Outcome 4 [SE0.24]	CH2.40	Structure and Properties of Diamond	Describe the structure of diamond and give its properties.	✓	5.2.3.1
	3.3.2	3	4			CH2.41	Explaining the Properties of Diamond	Explain the properties of diamond in terms of its structure.	✓	5.2.3.1
	3.3.2	3	4			CH2.42	Structure and Properties of Graphite	Describe the structure of graphite and give its properties.	✓	5.2.3.2

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
How structure affects properties	3.3.2	3	4	Chemistry: Elements, mixtures and compounds	Component 3: Outcome 4 [SE0.24]	CH2.43	Explaining the Properties of Graphite	Explain the properties of graphite in terms of its structure.	✓	5.2.3.2
	3.3.2	3	4			CH2.44	Comparing Graphite & Diamond	Compare the structures of diamond and graphite. Explain the properties of graphite and diamond in terms of their structures.	✓	5.2.3.1 5.2.3.2
Separating mixtures	3.3.3	3	5		Component 3: Outcome 5 [SE0.25]	CH1.23	Separating Mixtures	Identify different separating techniques and apply knowledge to solve simple problems.	✓	5.1.1.2
	3.3.3	3	5			CH1.24	Keywords Relating to Solutions	Use the keywords relating to solutions correctly.	✓	Supple-mentary
	3.3.3	3	5			CH1.25	Filtration	Recall the method for carrying out filtration and its uses.	✓	5.1.1.2
	3.3.3	3	5			CH1.26	Evaporation	Recall the method for carrying out evaporation and its uses.	✓	5.1.1.2
	3.3.3	3	5			CH1.27	Crystallisation	Recall the method for carrying out crystalisation and its uses.	✓	5.1.1.2
	3.3.3	3	5			CH1.28	Practical: Simple Distillation	Recall the method for carrying out simple distillation and its uses.	✓	RP13
	3.3.3	3	5			CH1.29	Fractional Distillation	Recall the method for carrying out fractional distillation and its uses.	✓	5.1.1.2
	3.3.3	3	5			CH1.31	Which Separation Technique?	Apply knowledge of separation techniquest to solve problems.	✓	5.1.1.2
	3.3.3	3	6		Component 3: Outcome 6 [SE0.26]	CH1.30	Paper Chromatography	Recall the method for carrying out paper chromatography and its uses.	✓	5.1.1.2
	3.3.3	3	6			CH8.06	Paper Chromatography	Explain how paper chromatography can be used to separate mixtures of liquids (often coloured) that are soluble in the same solvent.	✓	5.8.1.2

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Metals and alloys	3.3.4	3	7	Chemistry: Elements, mixtures and compounds	Component 3: Outcome 7 [SE0.27]	CK13.11	Recycling	Explain the processes and considerations for waste disposal and recycling.		Prior
	3.3.4	3	7			CH10.23	Reducing the Use of Resources	Understand how reducing, reusing and recycling can extend the lifetime of finite resources.	✓	5.10.2.2
	3.3.4	3	7			CH10.24	Sustainable Development	Understand what is meant by sustainable development and how it can be achieved.	✓	5.10.1.1
	3.3.4	3	7			CH4.018	Extraction of Metals By Reduction	Explain, using the position of carbon in the reactivity series, the principles of processes used to extract metals, including extraction of a non-ferrous metal.	✓	5.4.1.3
	3.3.4	3	7			CH4.099	Extracting Metals by Electrolysis	Extracting metals from their ores using alunminium as an example using electrolysis.	✓	5.4.3.3
	3.3.4	3	8		Component 3: Outcome 8 [SE0.28]	CH2.01	Introducing Chemical Bonds	Describe ionic, covalent and metallic bonds in terms of the transfer/sharing of electrons and in terms of electrostatic forces.	✓	5.2.2.7
	3.3.4	3	8			CH2.04	Pure Metals	Identify and describe pure metals and their structure.	✓	5.2.2.7
	3.3.4	3	8			CH2.05	Properties of Pure Metals	State the properties of pure metals and apply this knowledge to simple situations.	✓	5.2.2.7
	3.3.4	3	8			CH2.06	Explaining the Properties Pure Metals	Explain the properties of pure metals in terms of their structure.	✓	5.2.2.7
	3.3.4	3	8			CH2.09	Metals as Conductors	Explain the electrical and thermal conductivity of metals in terms of their structure.	✓	5.2.2.8
	3.3.4	3	9		Component 3: Outcome 9 [SE0.29]	CH2.07	Alloys & Their Properties	Explain the properties of alloys in terms of their structure and compare alloys to pure metals.	✓	5.2.2.7

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Polymers	3.3.5	3	10	Chemistry: Elements, mixtures and compounds	Component 3: Outcome 10 [SE0.30]	CK13.07	Polymers	To be able to define a polymer and discuss problems with the use of plastic.		Prior
	3.3.5	3	10			CH2.37	Structure and Properties of Polymers	Describe the structure of polymers and give their general properties.	✓	5.2.2.5
Reactions of acids	3.4.1	4	1	Chemistry: Chemistry in our world	Component 4: Outcome 1 [SE0.31]	CH4.019	Acids & Bases	Describe acids and bases using laboratory and everyday examples.	✓	Prior
	3.4.1	4	1			CH4.020	Alkalis	Explain the general properties of alkalis and give examples.	✓	Prior
	3.4.1	4	1			CH4.021	pH Scale	Recall that relative acidity and alkalinity are measured by pH, using the pH scale.	✓	Prior
	3.4.1	4	1			CH4.022	Acids & Metals: Word Equations	Write and extract information from word equations between acids and metals.	✓	5.4.2.1
	3.4.1	4	1			CH8.12	Testing for Gases: Hydrogen	Describe how to test for the presence of hydrogen gas.	✓	5.8.2.1
	3.4.1	4	2		Component 4: Outcome 2 [SE0.32]	CH4.038	Neutralisation	Describe neutralisation as an acid reacting with a base or alkali to form salt plus water. Recognise that aqueous neutralisation reactions can be generalised to hydrogen ions reacting with hydroxide ions to form water.	✓	5.4.2.2
	3.4.1	4	2			CH4.045	Neutralisation - Acids & Metal Carbonates: Word Equations	Write and extract information from word equations between acids and metal carbonates.	✓	5.4.2.2
	3.4.1	4	2			CH4.059	Soluble Salts	Explanation of producing soluble salts from a variety of acid reactions.	✓	5.4.2.3
Energy and rate of reaction	3.4.2	4	3		Component 4: Outcome 3 [SE0.33]	CH5.02	Exothermic Reactions: Introduction	Describe exothermic reactions and use the law of conservation of energy to explain why the product molecules must have less energy than the reactants.	✓	5.5.1.1
	3.4.2	4	3			CH5.04	Exothermic Reactions: Combustion	Describe combustion as an exothermic oxidation reaction. Give the basic word equation for the complete and incomplete combustion of fuel.	✓	5.5.1.2

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Energy and rate of reaction	3.4.2	4	3	Chemistry: Chemistry in our world	Component 4: Outcome 3 [SE0.33]	CH5.07	Exothermic Reactions: Neutralisation	Describe neutralisation as an example of an exothermic reaction.	✓	5.5.1.2
	3.4.2	4	3			CH5.10	Endothermic Reactions: Introduction	Describe endothermic reactions and use the law of conservation of energy to explain why the product molecules must have more energy than the reactants.	✓	5.5.1.1
	3.4.2	4	3			CH5.14	Endothermic Reactions: Citric Acid & Sodium Hydrogen Carbonate	Describe the reaction between citric acid and sodium hydrogen carbonate as an example of an endothermic reaction.	✓	5.5.1.2
	3.4.2	4	4		Component 4: Outcome 4 [SE0.34]	CH6.10	Rate of Reaction: Factors Affecting Rate	Review from Key Stage 3 of the five factors that can affect the rate of reaction.	✓	5.6.1.1
	3.4.2	4	4			CH6.11	Rate of Reaction: Describing Data	How to describe data in tables and graphs obtained during rate of reaction experiments. In addition, how describe graphs with multiple lines is included.	✓	5.6.1.2
	3.4.2	4	4			CH6.15	Practical: Rate of Reaction: Temperature (Disappearing Cross	Practical to investigate the effect of temperature on the rate of reaction for the reaction between sodium thiosulfate and hydrochloric acid. This practical uses the time taken for a cross to disappear as a measure of the rate of reaction.	✓	5.6.1.2
Earth's atmosphere	3.4.3	4	5		Component 4: Outcome 5 [SE0.35]	CH9.02	The Earth's Early Atmosphere	Describe theories of how the Earth's atmosphere was formed and its composition.	✓	5.9.1.2
	3.4.3	4	5			CH9.03	How Oxygen Levels in the Atmosphere Increased	Explain the changes in oxygen content in the atmosphere.	✓	5.9.1.3
	3.4.3	4	6		Component 4: Outcome 6 [SE0.36]	CH9.01	The Earth's Atmosphere	Identify the composition of gases in the Earth's atmosphere.	✓	5.9.1.1
	3.4.3	4	6			CH9.04	How Carbon Dioxide Levels in the Atmosphere Decreased	Explain the changes in carbon dioxide content in the atmosphere.	✓	5.9.1.4
Fuels and human impacts on the atmosphere	3.4.4	4	7		Component 4: Outcome 7 [SE0.37]	CH7.01	Crude Oil	Explain how crude oil is formed.	✓	5.7.1.1
	3.4.4	4	7			CH7.03	Fractional Distillation of Crude Oil	Explain how crude oil can be separated into useful products using fractional distillation.	✓	5.7.1.2

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Fuels and human impacts on the atmosphere	3.4.4	4	7	Chemistry: Chemistry in our world	Component 4: Outcome 7 [SE0.37]	CH7.09	Complete Combustion of Hydrocarbons	Describe the complete combustion of hydrocarbons.	✓	5.7.1.3
	3.4.4	4	7			CK6.05	Combustion	To be able to recognise combustion reactions.		Prior
	3.4.4	4	8		Component 4: Outcome 8 [SE0.38]	CH9.08	Air Pollution from Fuels	Describe air pollution and pollutants from the combustion of fuels.	✓	5.9.3.1
	3.4.4	4	8			CH9.09	Pollutants: Carbon Dioxide	Explain the formation and impact of carbon dioxide as a pollutant.	✓	5.9.3.1 5.9.3.2
	3.4.4	4	8			CH9.10	Pollutants: Sulfur Dioxide	Explain the formation and impact of sulfur dioxide as a pollutant.	✓	5.9.3.1 5.9.3.2
	3.4.4	4	8			CH9.11	Pollutants: Nitrogen Oxides	Explain the formation and impact of nitrogen oxides as pollutants.	✓	5.9.3.1 5.9.2.4
	3.4.4	4	8			CH9.12	Pollutants: Particulates	Explain the formation and impact of particulates as pollutants.	✓	5.9.3.1 5.9.2.5
	3.4.4	4	8			CH9.13	Pollutants: Carbon Monoxide	Explain the formation and impact of carbon monoxide as a pollutant.	✓	5.9.3.1 5.9.2.6
	3.4.4	4	9		Component 4: Outcome 9 [SE0.39]	CH9.06	Climate Change: Natural Greenhouse Effect	Identify what the greenhouse effect is and describe how it impacts upon our planet.	✓	5.9.2.1
	3.4.4	4	9			CH9.16	Climate Change: Natural Factors	Identify natural occurrences which can affect climate change.	✓	5.9.2.3
	3.4.4	4	9			CH9.17	Climate Change: Historic Changes in Climate	Describe the historical changes in temperature, their causes and the impacts of these changes.	✓	5.9.2.3
	3.4.4	4	9			CH9.18	Climate Change: Human Factors	Describe the anthropogenic (human) causes of climate change.	✓	5.9.2.2

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Fuels and human impacts on the atmosphere	3.4.4	4	9	Chemistry: Chemistry in our world	Component 4: Outcome 9 [SE0.39]	CH9.19	Climate Change: Since Industrialisation	Describe the impact of the industrial revolution on climate change.	✓	5.9.2.2
	3.4.4	4	9			CH9.20	Climate Change: Enhanced Greenhouse Effect	Identify and describe what the enhanced greenhouse effect is.	✓	5.9.2.2
	3.4.4	4	9			CH9.21	Climate Change: Enhanced Greenhouse Effect Impacts	Describe how the enhanced greenhouse effect impacts our planet.	✓	5.9.2.2 5.9.2.3
Water for drinking	3.4.5	4	10		Component 4: Outcome 10 [SE0.40]	CH10.30	Natural Sources of Water	Describe different sources of raw water.	✓	5.10.1.2
	3.4.5	4	10			CH10.31	Potable Water	Describe potable water and the differences between potable and pure water.	✓	5.10.1.2
	3.4.5	4	10			CH10.32	Potable Water from Freshwater	Describe the treatment process to obtain potable water from freshwater	✓	5.10.1.2
	3.4.5	4	10			CH10.33	Potable Water from Seawater	Describe the treatment process to obtain potable water from seawater.	✓	5.10.1.2
	3.4.5	4	10			CH10.38	Required Practical 13: Analysis of Water – pH & Dissolved Solids	Measure the pH and dissolved solids, by evaporation, of a sample of water.	✓	RP 13
Energy, energy transfers and energy resources	3.5.1	5	1	Physics: Energy, forces and the structure of matter	Component 5: Outcome 1 [SE0.41]	PH1.01	Energy Stores	Recall and describe the different energy stores.	✓	Prior
	3.5.1	5	1			PH1.02	Systems in Physics	Describe the different systems used for models.	✓	6.1.1.1
	3.5.1	5	1			PH1.03	Changing Energy Stores	Identify the conservation of energy and changes in energy stores.	✓	6.1.1.1

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Energy, energy transfers and energy resources	3.5.1	5	1	Physics: Energy, forces and the structure of matter	Component 5: Outcome 1 [SE0.41]	PH1.04	Energy Pathways	Identify and describe the different methods of energy transfer between stores.	✓	6.1.1.1
	3.5.1	5	1			PH1.05	Energy Pathways in a System	Evaluate energy pathways within different system models.	✓	6.1.1.1
	3.5.1	5	2		Component 5: Outcome 2 [SE0.42]	PH1.55	Reducing Unwanted Energy Transfers: Thermal Insulation	Compare methods of reducing thermal energy transfer around the home considering conduction, convection and radiation.	✓	6.1.2.1
	3.5.1	5	2			PH1.56	Reducing Unwanted Energy Transfers: Vacuum Flask	Compare methods of reducing thermal energy transfer with a vacuum flask considering conduction, convection and radiation.	✓	6.1.2.1
	3.5.1	5	2			PH1.58	Reducing Unwanted Energy Transfers: Lubrication	Explore methods of reducing energy transfers through lubrication.	✓	6.1.2.1
	3.5.1	5	2			PH1.62	Energy dissipation	Describe the dissipation of energy to the surroundings.	✓	6.1.2.1
	3.5.1	5	2			PK15.05	Efficiency	An introduction to efficiency and identifying useful and wasted energy stores, and interpretting shapes of Sankey diagrams.		Prior
	3.5.1	5	3		Component 5: Outcome 3 [SE0.43]	PH1.65	Renewable & Non-Renewable Energy Resources	Identify a range of renewable and non-renewable energy resources.	✓	6.1.3
	3.5.1	5	3			PH1.66	Wind power	Describe how wind turbines can generate electricity.	✓	6.1.3
	3.5.1	5	3			PH1.67	Solar Power	Describe how solar cells can generate electricity.	✓	6.1.3
	3.5.1	5	3			PH1.68	Geothermal power	Describe how geothermal power stations can generate electricity.	✓	6.1.3

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Energy, energy transfers and energy resources	3.5.1	5	3	Physics: Energy, forces and the structure of matter	Component 5: Outcome 3 [SE0.43]	PH1.69	Hydroelectric Power	Describe how hydroelectric dams can generate electricity.	✓	6.1.3
	3.5.1	5	3			PH1.70	Pumped Storage	Describe how hydroelectric dams and other systems can be used as pumped storage systems.	✓	6.1.3
	3.5.1	5	3			PH1.71	Wave power	Describe how waves can generate electricity on and offshore.	✓	6.1.3
	3.5.1	5	3			PH1.72	Tidal Barrages	Describe how tidal barrages can generate electricity.	✓	6.1.3
	3.5.1	5	3			PH1.73	Bio-fuels	Describe how bio-fuels can generate electricity.	✓	6.1.3
	3.5.1	5	3			PH1.74	Fossil Fuels	Describe how fossil fuels can generate electricity.	✓	6.1.3
	3.5.1	5	3			PH1.75	Nuclear Power	Describe how nuclear fission reactors can generate electricity.	✓	6.1.3
	3.5.1	5	3			PH1.76	Summary of Energy Generation	Summarise different methods of energy generation.	✓	6.1.3
	3.5.1	5	3			PH1.77	Use of Energy resources	Consider the issues regarding energy generation and usage.	✓	6.1.3
	3.5.1	5	3			PH1.78	Interpreting Energy Resource Use	Evaluate trends in energy demand including the use of graphs.	✓	6.1.3
	3.5.1	5	3			PH1.79	Trends in Use of Energy Resources	Analyse current trends in energy use away from carbon dioxide emitting sources.	✓	6.1.3

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Forces and work	3.5.2	5	4	Physics: Energy, forces and the structure of matter	Component 5: Outcome 4 [SE0.44]	PH5.002	Introduction to Forces	Describing what a force is and how to represent it.	✓	6.5.1.2
	3.5.2	5	4			PH5.003	Contact & Non-Contact Forces	Describing the difference between contact and non-contact forces.	✓	6.5.1.2
	3.5.2	5	5		Component 5: Outcome 5 [SE0.45]	PH5.016	Practical: Effect of Surface Materials on Friction	Investigate how surface friction on an object affects the resultant force applied to an object.	✓	6.5.1.4
	3.5.2	5	5			PH5.017	Practical: Effect of Weight on Friction	Investigate how the weight of an object affects the magnitude of the frictional forces when a resultant force is applied to it.	✓	6.5.1.4
	3.5.2	5	5			PH1.06	Using W=Fd to Calculate Work I	Calculate work done using the equation W=Fd. Includes some application of knowledge but no unit conversions.	✓	6.1.1.1
Speed and stopping distances	3.5.3	5	6		Component 5: Outcome 6 [SE0.46]	PH5.078	Speed	Describe speeds as constant or varying and compare typical speeds.	✓	6.5.4.1.2
	3.5.3	5	6			PH5.083	Practical: Measuring Speed	Describe how to measure and record distance and time. Recorded data is used to calculate speed.	✓	6.5.4.1.2
	3.5.3	5	6			PH5.089	Instantaneous Speed vs Average Speed	Describe the difference between instantaneous and average speed.	✓	6.5.4.1.2
	3.5.3	5	6			PH5.090	Using v=s/t to Calculate Average Speed I	Calculate average speed using v=s/t. Includes some application of knowledge questions but no unit conversions.	✓	6.5.4.1.2
	3.5.3	5	6			PH5.091	Using v=s/t to Calculate verage Speed II	Calculate distance using s=vt. Includes some application of knowledge and unit conversion questions.	✓	6.5.4.1.2
	3.5.3	5	7		Compo-nent 5: Outcome 7 [SE0.47]	PH5.129	Thinking, Braking & Stopping Distance	Calculate stopping distance using thinking and braking distance and describe the factors that affect thinking distance and braking distance.	✓	6.5.4.3.1 6.5.4.3.3

ELC				CENTURY					Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Speed and stopping distances	3.5.3	5	8	Physics: Energy, forces and the structure of matter	Component 5: Outcome 8 [SE0.48]	BI5.013	Required Practical 6: Reaction Time	Investigate the effect of caffeine on reaction time using the 'ruler drop' test.	✓	6.5.4.3.2
	3.5.3	5	8			BI5.015	Reaction Time: Describing Nervous System Data	Describe patterns in reaction time data that are presented in tables.	✓	6.5.4.3.2
	3.5.3	5	8			BI5.016	Reaction Time: Interpreting Nervous System Data	Interpreting patterns in reaction time data that is presented in tables.	✓	6.5.4.3.2
	3.5.3	5	9		Component 5: Outcome 9 [SE0.49]	PH5.131	Estimating Stopping Distances I	Estimate stopping distances using graphs.	✓	6.5.4.3.3
Atoms and nuclear radiation	3.5.4	5	10		Component 5: Outcome 10 [SE0.50]	PH4.01	Discovery of Radioactivity	Identify how radioactivity was discovered and why it is measured in becquerels (Bq).	✓	6.4.2.1
	3.5.4	5	10			PH4.02	Nuclear Decay: α (Alpha)	Identify and describe the emission of alpha decay.	✓	6.4.2.1
	3.5.4	5	10			PH4.03	Nuclear Decay: β- (Beta minus)	Identify and describe the emission of beta minus decay.	✓	6.4.2.1
	3.5.4	5	10			PH4.04	Nuclear Decay: γ (Gamma)	Identify and describe the emission of gamma decay.	✓	6.4.2.1 6.4.2.2
	3.5.4	5	10			PH4.06	Nuclear Decay: Summary	Identify and describe the different types of nuclear decay. This includes alpha, beta minus, gamma and neutron decay.	✓	6.4.2.1
	3.5.4	5	10			PH4.07	Ionising Radiation	Identify the relative ionising properties of alpha, beta and gamma decay.	✓	6.4.2.1

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Electrical current	3.6.1	6	1	Physics: Electricity, magnetism and waves	Component 6: Outcome 1 [SE0.51]	PH2.09	Electrical Charge & Current	Describe the difference between charge and current in electrical circuits.	✓	6.2.1.2
	3.6.1	6	1			PH2.16	Potential Difference	Describe potential difference and how to measure it within a circuit.	✓	6.2.1.3
	3.6.1	6	1			PH2.17	Resistance	Describe resistance in term of electrons and different factors that can impact resistance, such as thickness and length.	✓	6.2.1.3
	3.6.1	6	2		Component 6: Outcome 2 [SE0.52]	PH2.41	Current in Series & Parallel Circuits	Describe the behaviour of current in series and parallel circuits.	✓	6.2.2
	3.6.1	6	2			PH2.49	AC vs DC	Describe the difference between direct and alternating currents.	✓	6.2.3.1
	3.6.1	6	2			PH2.50	UK Electricity Supply	Identify the properties of the UK electricity supply.	✓	6.2.3.1
Domestic electricity	3.6.2	6	3		Component 6: Outcome 3 [SE0.53]	PH2.55	Wiring a Plug: Type G/UK	Identify the structure of a type G (UK) plug. Describe the concept of grounding devices with earth wire and the potential differences between wires.	✓	6.2.3.2
	3.6.2	6	3			PH2.56	Choosing a Fuse	Describe the function of a fuse and how to select the correct rating of fuse for an appliance.	✓	6.2.3.2
	3.6.2	6	3			PH2.57	Electricity Supply Safety	Describe the safety features of electrical appliances to protect their users. Includes fuses, circuit breakers, materials and the concept of grounding and double insulation.	✓	6.2.3.2
	3.6.2	6	3			PH2.58	Dangers of Electricity	Describing the dangers of domestic electricity supplies.	✓	6.2.3.2
	3.6.2	6	4		Component 6: Outcome 4 [SE0.54]	PH2.70	Energy Transfers in Everyday Appliances	Describe the process of energy transfer in electrical devices. Define 1 W.	✓	6.2.4.2
	3.6.2	6	4			PH2.71	Using E=Pt to Calculate Energy I	Calculate the energy transferred by electrical appliances using E=Pt. Includes some application of knowledge questions, but no unit conversions.	✓	6.2.4.2

ELC				CENTURY						Trilogy
Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Domestic electricity	3.6.2	6	4	Physics: Electricity, magnetism and waves	Component 6: Outcome 4 [SE0.54]	PH2.72	Using E=Pt to Calculate Energy II	Calculate the energy transferred by electrical appliances using E=Pt. Includes application and unit conversions questions.	✓	6.2.4.2
	3.6.2	6	4			PH2.73	Rearranging E=Pt	Rearrange the E=Pt equation to calculate power and time. Includes application and unit conversions questions.	✓	6.2.4.2
Magnetism and electromagnetism	3.6.3	6	5		Component 6: Outcome 5 [SE0.55]	PH7.01	Attraction & Repulsion of Magnets	Describe the attraction and repulsion between unlike and like poles.	✓	6.7.1.1
	3.6.3	6	5			PH7.03	Magnetic Fields Around a Bar Magnet	Describe the shape and direction of the magnetic field around bar magnets and relate the strength of the field to the concentration of field lines.	✓	6.7.1.2
	3.6.3	6	6		Component 6: Outcome 6 [SE0.56]	PH7.05	Magnetic Fields Around a Wire	Describe how a current can create a magnetic field around a wire and the associated factors affecting the magnetic field.	✓	6.7.2.1
	3.6.3	6	6			PH7.06	Solenoids & Electromagnets	Explain how solenoid arrangements can enhance the magnetic effect.	✓	6.7.2.1
Different types of waves	3.6.4	6	7		Component 6: Outcome 7 [SE0.57]	PH6.01	Longitudinal Waves	Describe the characteristics of longitudinal waves.	✓	6.6.1.1
	3.6.4	6	7			PH6.02	Transverse Waves	Describe the characteristics of transverse waves.	✓	6.6.1.1
	3.6.4	6	7			PH6.03	Longitudinal vs Transverse Waves	Describe the difference between longitudinal and transverse waves.	✓	6.6.1.1
	3.6.4	6	8		Component 6: Outcome 8 [SE0.58]	PH6.04	Properties of Waves	Describe the features of a wave in terms of wavelength, frequency, peak/ crest, trough and amplitude.	✓	6.6.1.2
	3.6.4	6	8			PH6.08	Using v=fλ to Calculate Wave Speed I	Calculate wave speed using v=fλ. Includes application and unit conversion questions.	✓	6.6.1.2

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Topic	Spec Code	Component	Outcome	Strand	Diagnostic	Nugget Code	Nugget Name	Nugget Summary	Foundation Tier	Spec Code
Electromagnetic waves	3.6.5	6	9	Physics: Electricity, magnetism and waves	Component 6: Outcome 9 [SE0.59]	PH6.32	EM Spectrum: Introduction	Identify the order of the electromagnetic spectrum and the general characteristics of electromagnetic waves.	✓	6.6.2.1
	3.6.5	6	10		Component 6: Outcome 10 [SE0.60]	PH6.33	EM Spectrum: Radio Waves	Provide examples that illustrate the transfer of energy by radio-waves.	✓	6.6.2.1 6.6.2.4
	3.6.5	6	10			PH6.35	EM Spectrum: Microwaves	Provide examples that illustrate the transfer of energy by microwaves.	✓	6.6.2.1 6.6.2.4
	3.6.5	6	10			PH6.36	EM Spectrum: Infrared Radiation	Provide examples that illustrate the transfer of energy by infrared radiation.	✓	6.6.2.1 6.6.2.4
	3.6.5	6	10			PH6.37	EM Spectrum: Visible Light	Provide examples that illustrate the transfer of energy by visible light.	✓	6.6.2.1 6.6.2.4
	3.6.5	6	10			PH6.38	EM Spectrum: Ultraviolet	Provide examples that illustrate the transfer of energy by ultraviolet. Identify that ultraviolet wavelengths are ionising.	✓	6.6.2.1, 6.6.2.3 6.6.2.4
	3.6.5	6	10			PH6.39	EM Spectrum: X-rays	Provide examples that illustrate the transfer of energy by x-rays. Identify that x-ray wavelengths are ionising.	✓	6.6.2.1 6.6.2.3 6.6.2.4
	3.6.5	6	10			PH6.40	EM Spectrum: Gamma Rays	Provide examples that illustrate the transfer of energy by gamma. Identify that gamma wavelengths are ionising.	✓	6.6.2.1, 6.6.2.3 6.6.2.4
	3.6.5	6	10			PH6.41	EM Spectrum: Summary of Uses	Provide examples that illustrate the transfer of energy by gamma. Identify that gamma wavelengths are ionising.	✓	6.6.2.1, 6.6.2.3 6.6.2.4

Questions?
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