



Science Learning Map

Biology 

Chemistry 

Physics 

Year	Autumn	Spring	Summer
Nursery	<p>Discuss and investigate the seasonal changes Investigate and discuss celebrations Autumn and weather changes. Describe the differences in the seasons. Discuss how animals are nocturnal linked to Owl Babies. Recognise the changes in the environment during winter. Explore ice melting</p>	<p>Understand that we grow and change from babies. Butterfly Life Cycle Caterpillar to butterfly kit. How keeping healthy affects our bodies. Focus on different textures and materials when building house and bridge linked to stories Look at the natural world and growth of plants, trees and animals linked to Spring How plants change growing sunflowers Which material is best to use to build a house? Understand what plants need to grow and change.</p>	<p>Discuss the different habitats of animals i.e. land and sea. Understand how animals are different i.e. colour and pattern. Caring for animals in the environment What do animals need to survive?</p>
Reception	<p>Can talk about some of the things they have observed such as plants, animals, natural and found objects. Developing an understanding of growth, decay and changes over time. Selects resources they need to investigate the environment independently. Shows care and concern for living things and the environment.</p> <p>Everyday Materials</p> <ul style="list-style-type: none"> Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties. <p>Seasonal changes</p> <ul style="list-style-type: none"> Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies. 	<p>Discussing animals belonging to different animal groups Babies of people and animals— growth and change. Making observations of animals and explain why some things occur, and talk about changes. Making good food choices and eating a wide variety of foods.</p> <p>Animals including humans</p> <ul style="list-style-type: none"> Identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammals <p>Seasonal changes</p> <ul style="list-style-type: none"> Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies. 	<p>Confident to speak to share their own opinions about plants they have observed. Children work as part of a group to look after plants. Understanding healthy and non-healthy foods. Growing and changes linked to plants and humans. Making comparisons between different plants and how plants have grown. Being aware of what plants need to grow. Children know about similarities and differences in relation to places, objects, materials and living things.</p> <p>Animals including humans</p> <ul style="list-style-type: none"> Identify and name a variety of common animals that are carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. <p>Plants</p> <ul style="list-style-type: none"> Identify and describe the basic structure of a variety of common flowering plants, including trees identify and name a variety of common wild and garden plants, including deciduous and evergreen trees <p>Seasonal changes</p> <ul style="list-style-type: none"> Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies.
Year1	<p>Seasonal changes</p> <ul style="list-style-type: none"> Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies. 		
Year 2	<p>Everyday Materials</p> <ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses Compare how things move on different surfaces. 	<p>Living things and their habitats</p> <ul style="list-style-type: none"> Explore and compare the differences between things that are living, dead, and things that have never been alive 	<p>Plants – Observing over time</p> <ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

<p>Year 3</p>	<ul style="list-style-type: none"> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching <p>Animals including humans</p> <ul style="list-style-type: none"> Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <p>Rocks</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Describe in simple terms how fossils are formed when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter. <p>Animals including Humans</p> <ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	<ul style="list-style-type: none"> Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. <p>Living things and their habitats</p> <ul style="list-style-type: none"> Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats <p>Light</p> <ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the size of shadows change. <p>Plants</p> <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. 	<p>Forces and Magnets</p> <ul style="list-style-type: none"> Compare how things move on different surfaces. Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having 2 poles. Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.
<p>Year 4</p>	<p>Sound</p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases. <p>Electricity</p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. 	<p>All Living things</p> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things. <p>States of Matter</p> <ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.. 	<p>Animals including humans</p> <ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey.
<p>Year 5</p>	<p>Properties and Changes of Materials</p>	<p>Properties and Changes of Materials</p>	<p>Forces</p> <ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

<p>Year 6</p>	<ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution . Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. <p>Living things and their habitats</p> <ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. <p>Animals including humans</p> <ul style="list-style-type: none"> Describe the changes as humans develop to old age. <p>Light</p> <ul style="list-style-type: none"> Recognise that light appears to travel in straight lines. use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. <p>Living things and their habitats</p> <ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics 	<ul style="list-style-type: none"> Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. <p>Earth and Space</p> <ul style="list-style-type: none"> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth’s rotation to explain day and night, and the apparent movement of the sun across the sky. <p>Evolution</p> <ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. 	<ul style="list-style-type: none"> Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. <p>Electricity</p> <ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram. <p>Animals including humans</p> <ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.
<p>YR7 (7 lessons over two weeks)</p>	<ol style="list-style-type: none"> Safety in Science – Equipment and hazards. Chemical Changes (pt.1) – Types of reaction, word equations, metal reactions with acids, water and oxygen. Baseline – feedback and acceleration lessons guided by areas of development from baseline analysis.. Cell Biology (pt.1) – Animal and plant cells, specialised cells, unicellular organisms. P2S1 - Assessment Particle model of matter (pt.1) – The particle model, changes of state, melting and boiling points, diffusion, pressure. Badger Task (Project)– Changes of state – Peer assessment <p>Space – The solar system, night and day, seasons, phases of the moon.</p>	<ol style="list-style-type: none"> Chemical Analysis – Mixtures, solutions and solubility, evaporation, distillation, chromatography. Atomic structure & The Periodic Table (pt.1) – Metals and non-metals, The periodic Table, elements, compounds and formulae, Group 1, 7 and 0 elements. Organisation (pt.1) – The skeleton, joints, muscles, the respiratory system, smoking, drugs and alcohol, plant reproduction. Badger Task (Project) – Fit & Healthy – Peer assessment Waves (pt.1) – Types of wave, sound, loudness and pitch, The Electromagnetic Spectrum, echoes and ultrasound. 	<ol style="list-style-type: none"> Waves (pt.1) – Types of wave, sound, loudness and pitch, The Electromagnetic Spectrum, echoes and ultrasound. Magnetism – Magnets and magnetic fields, electromagnets and building electromagnets, investigating electromagnets. P2S2 – Assessment Ecology – Food chains and webs, ecosystems and interdependence, predator/prey cycles, adaptation, evolution, competition and extinction, biodiversity. Badger Task (Project) – Ecology – Peer assessment Forces (pt.1) – Force diagrams, calculating weight, contact & non-contact forces, drag forces and friction, balanced & unbalanced forces. Investigation skills – graphs, method writing, variables, calculating averages, anomalous results, conclusions, evaluations.
<p>YR8 (7 lessons over two weeks)</p>	<ol style="list-style-type: none"> COVID Catch up – Food chain and webs, Adaptation, Evolution & extinction, Atomic structure, Calculating weight, Balanced and unbalanced forces. Energy (pt.1) – Conduction, convection and radiation, insulation, renewable and non-renewable resources. 	<ol style="list-style-type: none"> Electricity – Static electricity, circuit symbols & drawing circuit diagrams, measuring potential difference and current, introduction to electricity formulae and rearranging formulae, resistance & calculating resistance, basic calculations. Infection and response (pt.1) – Microorganisms, diseases, defence against disease. 	<ol style="list-style-type: none"> Waves (pt.2) – Types of wave, reflection, refraction, calculating speed of waves, coloured & filters, the eye. P2S2 - Assessment Inheritance, variation & evolution – The structure of DNA, extracting DNA, inheritance, basic genetic diagrams, cell division, genetic modification & ethics, variation.

	<ol style="list-style-type: none"> Chemical changes (pt.2) – Acids & alkalis, the pH scale, making indicators, making salts, neutralisation. Homeostasis & Response – Adolescence, reproductive systems, The Menstrual Cycle, Fertilisation & implantation, development of a foetus, contraception. P2S1 - Assessment Badger Task (Project) – Acids & Alkalis – Peer assessment Chemistry of the atmosphere – The atmosphere, the structure of the Earth, the rock cycle. 	<ol style="list-style-type: none"> Quantitative Chemistry (pt.1) – Formulae, calculating relative formula mass, calculating percentage composition. Bioenergetics (pt.1) – Review plants cells and leaf structure, plant minerals and fertilisers, photosynthesis, limiting factors for photosynthesis, plant adaptations, aerobic respiration, anaerobic respiration. Badger Task (Project) – Photosynthesis – Peer assessment Rate of Reaction – Basic collision theory, methods to measure rate of a reaction, investigating how concentration impact rate of reaction, catalysts. Waves (pt.2) – Types of wave, reflection, refraction, calculating speed of waves, coloured & filters, the eye. 	<ol style="list-style-type: none"> Badger Task (Project) – Inheritance – Peer assessment Using Resources – Extracting metals, reduction, displacement, basic electrolysis. Forces (pt.2) – Calculating speed, motion graphs, acceleration & relative motion, calculating work done. Investigation skills – graphs, method writing, variables, calculating averages, anomalous results, conclusions, evaluations.
<p>YR9 (9 lessons over two weeks)</p>	<ol style="list-style-type: none"> Covid-catch up – extracting metals; speed and acceleration calculations and motion graphs; the respiratory system, gas exchange and respiration; Inheriatnce; waves – refraction and refraction. Cell Biology (pt.2) – Animal and plant cells, Eukaryotes and prokaryotes, comparing cells, required practical for microscopy, specialised cells, chromosomes, gene and DNA, mitosis and binary fission, meristems. Atomic Structure and The Periodic Table (pt.1) – Elements, compounds and formulae, word and chemical equations, filtration, evaporation and distillation, structure of an atom and electronic configuration, comparing models of the atom, the development of the periodic table, the modern periodic table, group 1, group 7, group 0. Energy (pt.2) – Energy stores and systems, energy transfers, kinetic energy, gravitational potential energy, elastic energy, Hooke’s Law, specific heat capacity. Organisation (pt.2) – Cell organisation, the digestive system, nutrients, required practical for food tests, enzymes. Structure, bonding and the properties of matter (pt.1) – ionic bonding, covalent bonding, properties of ionic compounds. Electricity(pt.2) – Circuit symbols and building basic circuits, measuring current and potential difference in series and parallel circuits, calculating charge and current, resistance and Ohm’s Law, required practical for resistance of a wire. P2S1 assessment 	<ol style="list-style-type: none"> Organisation (pt.3) – Required practical for enzymes, the circulatory system, the heart, blood composition, the lungs and gas exchange. Structure, bonding and the properties of matter (pt.2) – properties of simple covalent substances, polymers, giant covalent structures, fullerenes, metals and metallic bonding, alloys, states of matter and changes of state. Particle model of matter (pt.2) – Calculating density, required practical for density of regular and irregular objects. Atomic structure (pt.1) – Comparing models of the atom, Rutherford’s scattering experiment, radioactive decay, isotopes, nuclear equations. Infection and Response (pt.2) – Pathogens, communicable diseases, symptoms, treatments, prevention, fighting disease, white blood cells, vaccination, immunity. Bioenergetics (pt.2) – Plant cells and leaf structure, photosynthesis and starch test, limiting factors, required practical for photosynthesis and light intensity. P2S2 Assessment 	<ol style="list-style-type: none"> Quantitative Chemistry (pt2) – Conservation of mass, relative formula mass, percentage composition, mole calculations, reacting masses, titrations, calculating concentrations. Energy(pt.3) - transfers, systems, efficiency, calculating power, energy resources and their uses, trends in energy resources. Cell Biology (pt.3) – Stems cells, diffusion, osmosis, perfect exchange surfaces, required practical for osmosis, active transport. Chemical Changes (pt.3) – The pH scale, acids, bases and alkalis, Neutralisation, acids and carbonates, required practical for acids and metal oxides, reactions between acids and metals, reactions between metals and water, displacement, reduction, electrolysis. Electricity (pt.3) – Resistance in series, thermistors, LDR’s, I/V characteristics, AC/DC mains electricity, calculating power, energy transfers in everyday appliances, $I=Qt$, $E=QV$, The National Grid. Energy Changes – Endothermic and exothermic reactions, reaction profiles, required practical for energy changes, bond energy calculations. P2S3 Assessment

Year 10 & 11 will continue to follow the previous order of study to make sure they have covered all topics and are fully prepared for their GCSE exams

<p>YR10 (Trilogy) (9 lessons over two weeks)</p>	<ol style="list-style-type: none"> Covid-catch up – Photosynthesis RQP, limiting factors, structure of the atom, covalent V ionic bonding, plum pudding v nuclear model. Cell Biology (pt4) - cell division, diffusion and osmosis recap, osmosis RQP, active transport, perfect exchange surfaces. Chemical Changes (pt.4) – The pH scale, acids, bases and alkalis, Neutralisation, acids and carbonates, required practical for acids and metal oxides, reactions between acids and metals, reactions between metals and water, displacement, reduction, electrolysis. Energy (pt4) – Energy stores and systems, energy transfers and efficiency recap, power and conservation of energy, renewable and no-renewable energy resources. Quantitative Chemistry (pt3) – Conservation of mass, relative formula mass, percentage composition, mole calculations, reacting masses, titration practical. 	<ol style="list-style-type: none"> Energy Changes – Endothermic and exothermic reactions, reaction profiles, required practical for energy changes, bond energy calculations. Organisation (pt.3) – Communicable and non-communicable diseases, risk factors, coronary heart disease, artificial blood, artificial hearts, artificial valves, cancer. Electricity (pt.4) – Resistance, required practical for resistance in series and parallel circuits, V-I graphs, thermistors, LDR’s, wiring a plug, calculating power of electrical devices, The national Grid. Organisation (pt4) –Plant cell organisation, structure of a leaf, transpiration V translocation, potometer. Chemical changes (pt.4) – basic electrolysis, electrolysis of solutions, electrolysis RQP. Particle Model of Matter (pt3) – change of state recap, SHC, specific latent heat. 	<ol style="list-style-type: none"> WORK EXPERIENCE Waves – Transverse and longitudinal waves, waves experiments and the wave equation, reflection, refraction, electromagnetic waves, properties and uses of electromagnetic waves, infra-red and temperature, required practical for black silver and white cans. Chemical analysis (pt.1) – Purity and formulations, chromatography and Rf values, testing for gases. Forces (pt 3) – Contact and non-contact forces, scale diagrams, resolving forces, weight, mass and gravity, work done and power, required practical for Hooke’s Law, calculating speed, calculating acceleration, distance-time graphs and velocity-time graphs. Ecology (pt2) – competition, abiotic V biotic factors, adaptations, extremophiles, quadrats and transects, quadrat RQP, decay, the carbon and water cycle, biodiversity, waste management, maintaining ecosystems, global warming, deforestation and peat bogs.
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<p style="text-align: center;">YR10 (Biology)</p>	<p>6. Infection and Response (pt.3) – fighting disease, vaccination, developing drugs, drug trials, antibiotic resistance.</p> <p>7. Bioenergetis (pt3) – aerobic and anaerobic respiration, metabolism and response to exercise.</p> <p>8. P2S1 Assessment</p> <p>1. Covid-catch up – Cell Bio pt2: osmosis RQP and Exchange surfaces; Organisation pt2: the respiratory system and gas exchange; the heart and circulatory system; communicable diseases, risk factors and cancer.</p> <p>2. Bioenergetis (pt2) – aerobic and anaerobic respiration, metabolism and response to exercise.</p> <p>3. Homeostasis and response (pt.1) – The nervous system, synapses and reflexes, requires practical for reaction times, the brain, the eye.</p> <p>4. P2S1 assessment</p> <p>1. Covid-19 Catch Up – Energy changes: thermic reactions, reaction profiles and bond energies; cells and batteries; Atomic Structure and Periodic Table: atomic structure and isotopes, relative abundance; modern and early periodic table; group 1, 7 and 0; Structure and Bonding: properties of simple molecules and macromolecules, nanoparticles.</p> <p>2. Quantitative Chemistry (pt2) – Relative formula mass, percentage composition, mole calculations, reacting masses, titrations, concentration calculations, atom economy and percentage yield.</p> <p>3. Chemical changes (pt.2) – separating metals from metal oxides.</p> <p>4. P2S1 assessment</p>	<p>7. Atomic structure (pt2) –types of radiation, uses of radiation, background radiation, nuclear equations recap, half-life calculations.</p> <p>8. Organic Chemistry – Crude oil, alkanes, fractional distillation, cracking, alkenes.</p> <p>9. Homeostasis and response (pt.2) – The nervous system, synapses and reflexes, requires practical for reaction times, the endocrine system, controlling body temperature, controlling blood glucose concentration, diabetes, fertility hormones and contraception.</p> <p>10. P2S2 Assessment</p> <p>1. Inheritance, variation and evolution (pt1) – DNA, protein synthesis, mutations, mitosis and meiosis, sexual and asexual reproduction, genetic diagrams, inheriting disorders, variation, evolution and natural selection, Darwin and Lamarck, extinction, selective breeding, genetic engineering, cloning.</p> <p>2. Homeostasis and response (pt.2) – the endocrine system, controlling body temperature, controlling blood glucose concentration, diabetes, controlling blood water concentration, kidney failure and dialysis.</p> <p>3. P2S2 assessment</p> <p>1. Chemical changes (pt.2) – reduction and oxidation reactions, electrolysis, electrolysis RQP.</p> <p>2. Rate and Extent of Chemical Change – Rate of reaction practical and theory, RQP, tangents and gradients on RoR graphs, reversible reactants, Le Chatelier's principle and equilibrium.</p> <p>3. P2S2 assessment</p>	<p>6. P2S3 assessment</p> <p>1. WORK EXPERIENCE Homeostasis and response (pt.2) - Contraception, plant hormones, commercial uses for plant hormones.</p> <p>2. Ecology (pt2) – Variation and evolution, Darwin V Lamarck, extinction, speciation, classification</p> <p>3. P2S3 assessment</p> <p>1. WORK EXPERIENCE</p> <p>2. Organic Chemistry – Crude oil, alkanes, fractional distillation, cracking, alkenes, polymers, reactions of alkenes – hydrogenation and making ethanol, alcohols, carboxylic acids.</p> <p>3. P2S3 assessment</p>
<p style="text-align: center;">YR10 (Chemistry)</p>	<p>1. Covid-19 Catch Up – Energy changes: thermic reactions, reaction profiles and bond energies; cells and batteries; Atomic Structure and Periodic Table: atomic structure and isotopes, relative abundance; modern and early periodic table; group 1, 7 and 0; Structure and Bonding: properties of simple molecules and macromolecules, nanoparticles.</p> <p>2. Quantitative Chemistry (pt2) – Relative formula mass, percentage composition, mole calculations, reacting masses, titrations, concentration calculations, atom economy and percentage yield.</p> <p>3. Chemical changes (pt.2) – separating metals from metal oxides.</p> <p>4. P2S1 assessment</p>	<p>1. Atomic structure – Modern theory of the atom, development of the model of the atom, isotopes, types of radiation, uses of radiation, nuclear equations, half-life, background radiation and contamination, Chernobyl and nuclear power, nuclear fission, nuclear fusion.</p> <p>2. Forces (pt.1) – Contact and non-contact forces, weight, mass and gravity, centre of mass.</p> <p>3. P2S2 Assessment</p>	<p>1. WORK EXPERIENCE</p> <p>2. Forces (pt.2) – force diagrams, resolving forces, scaled balanced forces, work done, Hooke's Law, Required practical for Hooke's Law, moments, fluid pressure, levers and gears.</p> <p>3. P2S3 assessment</p>
<p style="text-align: center;">YR10 (Physics)</p>	<p>1. Covid-19 Catch Up – Particle Model: particle motion, pressure in gases; Energy: infrared radiation, energy transfers and insulation, efficiency and power.</p> <p>2. Energy (pt.2) – Wind, solar and geothermal power, hydroelectric, tides and wave power, trends in energy resource use.</p> <p>3. Electricity (pt.2) – thermistors, LDR's, wiring a plug, calculating power of electrical devices, The national Grid.</p> <p>4. P2S1 assessment</p>	<p>1. Atomic structure – Modern theory of the atom, development of the model of the atom, isotopes, types of radiation, uses of radiation, nuclear equations, half-life, background radiation and contamination, Chernobyl and nuclear power, nuclear fission, nuclear fusion.</p> <p>2. Forces (pt.1) – Contact and non-contact forces, weight, mass and gravity, centre of mass.</p> <p>3. P2S2 Assessment</p>	<p>1. WORK EXPERIENCE</p> <p>2. Forces (pt.2) – force diagrams, resolving forces, scaled balanced forces, work done, Hooke's Law, Required practical for Hooke's Law, moments, fluid pressure, levers and gears.</p> <p>3. P2S3 assessment</p>
<p style="text-align: center;">YR11 (Trilogy) (8 lessons over two weeks)</p>	<p>1. Covid-catch up – Forces (pt4): forces, scale diagrams, weight/mass/gravity, work done and power, Hookes Law RQP, calculate speed/acceleration, distance and velocity time graphs, acceleration RQP, Newton's Laws, stopping distances, momentum. Ecology (pt2): competition, abiotic V biotic factors, adaptations, extremophiles, quadrats and transects, quadrat RQP, decay, the carbon and water cycle, biodiversity, waste management, maintaining ecosystems, global warming, deforestation and peat bogs. Organic Chemistry: crude oil, fractional distillation, alkanes, cracking and alkenes.</p>	<p>1. Magnetism and Electromagnets – Permanent and induced magnets, electromagnets, investigating electromagnets, right hand rule, the motor effect, left hand rule, electric motors, applications of the motor effect.</p> <p>2. Inheritance, Variation and Evolution – Sexual/Asexual reproduction, chromosomes, DNA, proteins and genomes, Meiosis, genetic diagrams, inherited disorders, mutation, variation, antibiotic resistance, evolution, fossils, selective breeding, genetic engineering, classification.</p> <p>3. Using Resources – Finite and renewable resources, reuse and recycle, life cycle assessments, potable water and waste water treatments, required practical purification, required practical finding mass of a solute.</p>	<p style="text-align: center;">TBD</p> <p style="text-align: center;">Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA's) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>

<p>YR11 (Biology)</p>	<p>2. Rate of Reaction – collision theory, required practical investigating concentration, temperature, surface area, catalysts, calculating rate of reaction from a graph, tangents and gradients, endothermic and exothermic reactions, Le Chatelier’s Principle.</p> <p>3. Magnetism and Electromagnets – Permanent and induced magnets, electromagnets, investigating electromagnets, right hand rule, the motor effect, left hand rule, electric motors, applications of the motor effect.</p> <p>4. P2S1&2 assessments</p> <p>1. Covid-catch up – Inheritance, Variation & Evolution – DNA structure, cell division, mutations, reproduction, meiosis, genetic diagrams, evolution, selective breeding, genetic modification, cloning. Infection and Response – classification</p> <p>2. Ecology – competition, abiotic V biotic factors, adaptations, extremophiles, predator-prey relationships</p> <p>3. P2S1&2 assessments</p>	<p>4. P2S3 assessment</p> <p style="text-align: center;">Revision</p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA’s) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p> <p>1. Ecology – quadrats, line transects, quadrat RQP, explaining ecosystems, required practical for decay, the water cycle and the carbon cycle, maintaining biodiversity, trophic levels and pyramids of biomass, food security and biotechnology.</p> <p>2. P2S3 assessment</p> <p style="text-align: center;">Revision</p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA’s) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	<p style="text-align: center;">TBD</p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA’s) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>
<p>YR11 (Chemistry)</p>	<p>1. Covid-catch up – Organic Chemistry – Crude oil, alkanes, fractional distillation, cracking, alkenes, polymers – recap, reactions of alkenes – hydrogenation and making ethanol, alcohols, carboxylic acids.</p> <p>2. Using Resources – Finite and renewable resources, reuse and recycle, life cycle assessments, potable water and waste water treatments, required practical purification, required practical finding mass of a solute.</p> <p>3. P2S1&2 assessments</p>	<p>1. Using Resources – the Haber process, NPK fertilisers.</p> <p>2. Chemistry of the Atmosphere – evolution of the atmosphere, greenhouse gases, climate change, carbon footprints, air pollution.</p> <p>3. P2S3 assessment</p> <p style="text-align: center;">Revision</p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA’s) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	<p style="text-align: center;">TBD</p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA’s) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>
<p>YR11 (Physics)</p>	<p>1. Waves – Recap: Types of wave and properties, EM waves, lenses. Visible light, perfect black bodies, radiation and Earth</p> <p>2. Magnetism and electromagnets – Permanent and induced magnets, electromagnetism theory, investigating electromagnets, the motor effect theory, building an electric motor, loudspeakers, the generator effect, microphones, transformers.</p> <p>3. P2S1&2 assessment</p>	<p>1. Magnetism and Electromagnetism – loudspeakers, the generator effect, microphones, transformers.</p> <p>2. P2S3 assessment</p> <p style="text-align: center;">Revision</p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA’s) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>	<p style="text-align: center;">TBD</p> <p>Lessons will be revision based until the GCSE exams. These lessons will be determined from analysis of both sets of mock exams using questions level analysis (QLA’s) to inform teachers and students of topics and skills that need extra attention during lessons and intervention.</p>