Curriculum Map 2024 – 2025 – TRIPLE SCIENCE

Triple Science: Year 10

Term	Assessments	Topics	Skills	Personal Development
Autumn 1	**Tests:** One 45 mark test at the end of each topic listed below: B8 https://www.bbc.co.uk/bitesize/guides/zg8nrwx/revision/1 B9 Respiration: https://www.bbc.co.uk/bitesize/guides/zcjy97h/revision/1 C4 Chemical Calculations: https://www.bbc.co.uk/bitesize/topics/z87mw6f P1 Conservation and Dissipation of Energy: https://www.bbc.co.uk/bitesize/topics/zycbsrd P2 Energy Transfer by Heating: https://www.bbc.co.uk/bitesize/guides/z2gjtv4/revision/1	**B8 Photosynthesis** Photosynthesis, The rate of Photosynthesis, How Plants use Glucose, Making the Most of Photosynthesis	Balancing equations Practical skills: rate of photosynthesis	Students to examine the implications of farmers using carbon dioxide made in the burning of fossil fuels to increase yields of crops and what effect this may have on the environment.
		B9 Respiration Aerobic Respiration, The Response the Exercise, Anaerobic Exercise, Metabolism and the Liver	Balancing equations	The importance of respiration to life and how our bodies respond to exercise.
		C3 Structure and Bonding States of Matter, Atoms into Ions, Ionic Bonding & Giant Ionic Structures, Covalent Bonding, Simple Molecular and Giant Covalent Structures, Fullerenes and Graphene, Metallic Bonding and Giant Metallic Structures, Nanoparticles and their Applications	Practical skills Analysing and explaining data Drawing dot and cross diagrams Calculating surface area to volume ratios	Considering the limitations of models to help us explain concepts in Science.
		C4 Chemical Calculations Relative Masses and Moles, Equations and Calculations, From Masses to Balanced Equations, The Yield of a Chemical Reaction, Atom Economy, Concentrations, Titrations and Titration Calculations, Volumes of Gases	Using and rearranging equations, e.g. mole calculations Ratios Calculating percentages Practical skills: titrations	How crash test dummies are used to ascertain the best volume of gas to cushion the effects of a vehicle collision.
		P1 Conservation and Dissipation of Energy Changes in Energy Stores, Conservation of Energy, Energy and Work, Gravitational and Potential Energy Stores, Kinetic and Elastic Energy Stores, Energy Dissipation, Energy and Efficiency, Electrical Appliances, Energy and Power	Using and rearranging formulae	An appreciation that there is the same amount of energy in the Universe now compared to when it began and into the future.
		P2 Energy Transfer by Heating Energy Transfer by Conduction, Infrared Radiation, Specific Heat Capacity, Heating & Insulating Buildings.	Using and rearranging formula, safely carrying out practical work	How to increase the efficiency of homes and businesses so that less energy is wasted by heating.

Autumn 2	**Tests:** One 45 mark test at the end of each topic listed below: One 30 mark test at the end of each topic listed below: B5 Communicable Diseases: https://www.bbc.co.uk/bitesize/topics/z9236yc C5 Chemical Changes: https://www.bbc.co.uk/bitesize/topics/zcdj97h P4 Electrical Circuits: https://www.bbc.co.uk/bitesize/topics/zp3ftv4 P5 Electricity in the home: https://www.bbc.co.uk/bitesize/guides/z3xv97h/revision/1	**B3 Organisation and the Digestive System** Tissues and Organs, The Human Digestive System, Chemistry of Food, Catalysts and Enzymes, Factors Affecting Enzyme Action, How the Digestive System Works, Making Digestion Efficient	Investigative skills: Food tests Drawing diagrams to show levels of organisation Analysing graphs of rates	The characteristics and evidence of what constitutes a healthy lifestyle and maintaining a healthy weight (including the links between an inactive lifestyle and ill health, such as cancer and cardio-vascular ill health) How to maintain healthy eating and the links between a poor diet and health risks, including tooth decay and cancer
		B5 Communicable Diseases Health and Disease, Pathogens and Disease, Growing bacteria in the lab and how to prevent bacterial growth, Preventing Infections, Viral and Bacterial Diseases, Diseases caused by Fungi and Protists, Human Defence Responses, Plant diseases and plant defence responses	Interpreting data from tables and graphs	An understanding of how diseases are caused, spread and how to prevent them.
		C5 Chemical Changes The Reactivity Series, Displacement Reactions, Extracting Metals, Salts from metals and from Insoluble bases, Other ways Salt can be made, Neutralisation and the pH Scale, Strong and Weak Acids	Practical skills: e.g. making copper salt Collecting and interpreting data Ionic equations and half-equations	Appreciating where metals come from and how humans extract them for use.
		P4 Electrical Circuits Electrical Charges and Fields, Current and Charge, PD and Resistance, Component Characteristics, Series Circuits, Parallel Circuits	Drawing and interpreting circuit diagrams. Investigative skills. Using and rearranging formulae.	The importance of electrical circuits in everyday life.
		P5 Electricity in the Home Alternating Current, Cables and Plugs, Electrical Power and PD, Electrical Current and Energy Transfer, Appliances and Efficiency	Analysing data from oscilloscopes Practical skills: wiring plugs Maths skills: percentages	Electrical safety in the home.

Term	Assessments	Topics	Skills	Personal Development
Spring 1	**Tests:** One 45 mark test at the end of each topic listed below: One 30 mark test at the end of each topic listed below: B6 Preventing and Treating Disease:	**B6 Preventing and Treating Disease** Vaccination, Antibiotics and Painkillers, Discovering Drugs, Developing Drugs, Making monoclonal antibodies and the uses of monoclonal antibodies	Interpreting data from tables and graphs. Practical skills.	Students to understand the implications of a double-blind trial where a sick person is not receiving potentially life-saving drugs despite being ill as scientists need to ascertain if any positive effect of the drug is down to the active ingredient or not. Students understand the implications of not being vaccinated to not just to themselves but to other members of the community they are in. Appreciate the ethical implications of medical research on animals and why this is both a good thing and a bad one.

	https://www.bbc.co.uk/bitesize/topics/z9236yc B17 Organising an Ecosystem: https://www.bbc.co.uk/bitesize/guides/z9nwtv4/revision/1 https://www.bbc.co.uk/bitesize/guides/zy7gw6f/revision/1 C6 Electrolysis: https://www.bbc.co.uk/bitesize/guides/zcsyw6f/revision/1 C7 Energy Changes: https://www.bbc.co.uk/bitesize/topics/z34kgdm P8 Forces in Balance: https://www.bbc.co.uk/bitesize/topics/z82j97h	**B17 Organising an Ecosystem** Feeding relationships, Materials Recycling, The Carbon Cycle, Rates of Decomposition	Analysing food chains and food webs Interpreting data from graphs	The importance of the water, carbon and decomposition cycles to life and food production.
		C6 Electrolysis Basic Electrolysis, Reactions at the Electrodes, Extraction of Aluminium, Electrolysis of Aqueous Solutions	Practical skills: e.g. electrolysis if a solution Half-equations	The uses and importance of aluminium to society.
		C7 Energy Changes Endothermic and Exothermic Reactions, Using Energy Transfers from Reactions, Reaction Profiles, Bond Energy Calculations, Chemical Cells and Batteries, Fuel Cells.	Practical skills: e.g. investigating temperature changes Analysing reaction profiles Calculating bond energies	Why exothermic reactions are important to life. The uses of exothermic and endothermic reactions in devices. Evaluating the use of hydrogen fuel cells
		P8 Forces in Balance Vectors and Scalars, Forces Between Objects, Resultant Force and the Centre of Mass, Moments, Levers and Gears, Parallelogram of Forces, Resolution of Forces.	Drawing and analysing vector diagrams Using and rearranging formulae	
Spring 2	**Tests:** One 45 mark test at the end of each topic listed below: One 30 mark test at the end of each topic listed below: B18 Biodiversity and Ecosystems: https://www.bbc.co.uk/bitesize/topics/zxfd3k7 C8 Rates and Equilibrium: https://www.bbc.co.uk/bitesize/topics/zs3gfcw P9 Motion: https://www.bbc.co.uk/bitesize/topics/z82j97h	**B18 Biodiversity and Ecosystems** The Human Population Explosion, Land and Water Pollution, Air Pollution, Deforestation and Peat Destruction, Global Warming, The Impacts of Change, Maintaining Biodiversity, Trophic Levels and Biomass, Biomass Transfers, Factors Affecting Food Security, Making Food Production Efficient, Sustainable Food Production	Analysing and Evaluating data	Students to explain how waste, deforestation and global warming have an impact on biodiversity. Students to explain and evaluate the conflicting societal pressures on maintaining biodiversity Students to understand the conflict between the need for cheap available compost to increase food production and the need to conserve peat bogs and peatlands as habitats for biodiversity and to reduce carbon dioxide emissions.
		C8 Rates and Equilibrium Rate of Reaction, Collision Theory and Surface Area, The Effect of Temperature, The Effect of Concentration and Pressure, The Effect of Catalysts, Reversible Reactions, Energy and Reversible Reactions, Dynamic Equilibrium, Changing conditions and Reaction Rates	Calculating rates of reaction using tangents to a curve Practical skills	

		P9 Motion Speed and Distance Time Graphs, Velocity and Acceleration, Velocity Time Graphs, Analysing Motion Graphs	Interpreting data from graphs, including calculating area and gradient Practical skills	
Term	**Assessments**	**Topics**	**Skills**	**Personal Development**
Summer 1	**Tests:** One 45 mark test at the end of each topic listed below: B16 Adaptations, Interdependence and Competition: https://www.bbc.co.uk/bitesize/guides/z9pd6yc/revision/1 C9 Crude Oil and Fuels: https://www.bbc.co.uk/bitesize/guides/zshvw6f/revision/1 P10 Forces and Motion: https://www.bbc.co.uk/bitesize/topics/z82j97h	**B16 Adaptations, Interdependence and Competition** The importance of Communities, Organisms in their Environment, Distribution and Abundance, Competition in Animals, Competition in Plants, Adaptations and Survival, Adaptations in Animals and Plants	Practical skills: Field work Calculating mean, median and mode, estimating population size	The factors which affect biological communities and how humans contribute to this.
		C9 Crude Oil and Fuels Hydrocarbons, Fractional Distillation of Oil, Burning Hydrocarbon Fuels, Cracking Hydrocarbons	Practical skills Using comparative language	How the cost of good is affected by oil prices. An appreciation of how everyday fuels are produced.
		C10 Organic Reactions Reactions of the Alkenes, Structures of Alcohols, Carboxylic Acids and Esters, Reactions and Uses of Alcohols, Carboxylic Acids and Esters	Drawing displayed formulae Practical skills	
		P10 Forces and Motion Forces and Acceleration, Weight and Terminal Velocity, Forces and Braking, Momentum, Conservation of Momentum, Impact Forces and Safety	Evaluating and drawing force diagrams Using and rearranging formulae Practical skills	Using physics to evaluate car safety features and why it is important to, e.g. wear a seatbelt and not use a mobile phone whilst driving
Summer 2	Biology Paper 1 Mock Exam – 100 marks Past papers: https://www.aqa.org.uk/subjects/science/gcse/biology-8461/assessment-resources?f.Component%7C7=Paper+1 Chemistry Paper 1 Mock Exam – 100 marks Past papers: https://www.aqa.org.uk/subjects/science/gcse/chemistry-8462/assessment-resources?f.Component%7C7=Paper+1	**Biology Paper 1 Revision** **Chemistry Paper 1 Revision** **Physics Paper 1 Revision**		

	Physics Paper 1 Mock Exam – 100 marks Past papers: https://www.aqa.org.uk/subjects/science/gcse/physics-8463/assessment-resources?f.Component%7C7=Paper+1			

Triple Science: Year 11

Term	Assessments	Topics	Skills	Personal Development
Autumn 1	**Tests:** One 45 mark test at the end of each topic listed below: B10 The Human Nervous System: https://www.bbc.co.uk/bitesize/guides/zprxy4j/revision/1 B11 Hormonal Coordination: https://www.bbc.co.uk/bitesize/topics/zy468mn C11 Polymers: https://www.bbc.co.uk/bitesize/guides/z3v4xfr/revision/6 C12 Chemical Analysis: https://www.bbc.co.uk/bitesize/topics/z2tpmsg P12 Wave Properties: https://www.bbc.co.uk/bitesize/topics/zcwkgdm	**B10 The Human Nervous System** Principals of Homeostasis, The Structure and Function of the Nervous System, Reflex Actions	Practical skills: Measuring reaction times	Ideas around eyesight and the structure of the eye.
		B11 Hormonal Coordination Principals of Hormonal Control, The Control of Blood Glucose Levels and Treating Diabetes, The role of Negative Feedback, Human Reproduction, Hormones and the Menstrual Cycle, The Artificial Control of Fertility and Infertility Treatments	Analysing data	Students to evaluate information around the relationship between obesity and diabetes, and make recommendations taking into account social and ethical issues.
		C11 Polymers Addition Polymerisation, Condensation Polymerisation, Natural Polymers, DNA		
		C12 Chemical Analysis Pure Substances and Mixtures, Analysing Chromatograms, Testing for Gases, Tests for Positive and Negative Ions, Instrumental Analysis	Practical skills: e.g. finding R_f values Calculations	Effects of compound combinations in e.g. drugs.
		P12 Wave Properties The Nature and Properties of Waves, Reflection, Refraction, Waves in Context, Sound Waves, Uses of Ultrasound, Seismic Waves	Analysing oscilloscope diagrams	How ultrasound can be used to check the progress of a growing foetus using a pre-natal scan and the importance of waves in detecting earthquakes early to allow communities to be evacuated,
Autumn 2	**Tests:** One 30 mark test at the end of each topic listed below: B12 Homeostasis in Action: https://www.bbc.co.uk/bitesize/guides/zxgmfcw/revision/1 B13 Reproduction: https://www.bbc.co.uk/bitesize/topics/zpb7cj6	**B12 Reproduction** Types of Reproduction, Cell Division in Sexual Reproduction, DNA and the Genome, Inheritance in Action, More about Genetics, Inherited Disorders and Screening for Genetic Disorders	Using punnett squares for genetic crosses Calculating ratios and proportionality	Screening for inherited disorders The facts about reproductive health, including fertility and the potential impact of lifestyle on fertility for men and women. That they have a choice to delay sex or to enjoy intimacy without sex as a method of not becoming pregnant. The facts about the full range of contraceptive choices, efficacy and options available The benefits of regular self-examination and screening Key facts about puberty, the changing adolescent body and menstrual wellbeing The main changes which take place in males and females, and the implications for emotional and physical health

	C13 The Earth's Atmosphere: https://www.bbc.co.uk/bitesize/topics/zw2xjty C14 The Earth's Resources: https://www.bbc.co.uk/bitesize/topics/z9wqk2p P13 Electromagnetic Waves: https://www.bbc.co.uk/bitesize/guides/z9bw6yc/revision/3 P14 Light: https://www.bbc.co.uk/bitesize/guides/zw42ng8/revision/1 https://www.bbc.co.uk/bitesize/guides/zt7srwx/revision/1	**B13 Reproduction** Types of Reproduction, Cell Division in Sexual Reproduction, The Best of Both Worlds, DNA and the Genome, DNA Structure and Protein Synthesis, Gene Expression and Mutation, Inheritance in Action, More about Genetics, Inherited Disorders and Screening for Genetic Disorders	Using punnett squares for genetic crosses Calculating ratios and proportionality	Screening for inherited disorders The facts about reproductive health, including fertility and the potential impact of lifestyle on fertility for men and women. That they have a choice to delay sex or to enjoy intimacy without sex as a method of not becoming pregnant. The facts about the full range of contraceptive choices, efficacy and options available The benefits of regular self-examination and screening Key facts about puberty, the changing adolescent body and menstrual wellbeing The main changes which take place in males and females, and the implications for emotional and physical health
		C13 The Earth's Atmosphere The History of our Atmosphere, Our Evolving Atmosphere, Greenhouse Gases, Global Climate Change, Atmospheric Pollutants,	Chemical equations Analysing trends in data	Greenhouse gases and climate change. What is causing these changes and discussions of how this can be combatted.
		C14 The Earth's Resources Finite and Infinite Resources, Water that is Safe to Drink, Treating Waste Water, Extracting Metals from Ores, Life Cycle Assessments, Reduce - Reuse - Recycle	Practical skills	The Earth has limited resources and we are responsible for using these wisely, 'reduce, reuse, recycle', how waste water is treated etc.
		P13 Electromagnetic Waves The EM Spectrum, Radio waves to Light Waves, Communications using Waves, UV to Gamma Rays	Orders of magnitude and prefixes	The hazards and uses of electromagnetic waves, including their use in medicine and the risks and benefits of using e.g. X-rays or gamma rays in radiotherapy.
		P14 Light Reflection, Refraction, Light and Colour, Lenses	Practical and maths skills including the use of protractors to analyse and draw ray diagrams	

Term	Assessments	Topics	Skills	Personal Development
Spring 1	**Tests:** One 45 mark test at the end of each topic listed below: C14 The Earth's Resources: https://www.bbc.co.uk/bitesize/topics/z9wqk2p C15 Using Our Resources: https://www.bbc.co.uk/bitesize/topics/z9wqk2p	**C15 Using Our Resources** Rusting, Useful Alloys, The Properties of Polymers, Glass, Ceramics and Composites, Making Ammonia – The Haber Process, The Economics of The Haber Process, Making Fertilisers in the Lab, Making Fertilisers in Industry	Practical skills	The Earth has limited resources and we are responsible for using these wisely, 'reduce, reuse, recycle', how waste water is treated etc.
		P15 Electromagnetism Magnetic Fields, Magnetic Fields of Electric Currents, Electromagnets in Devices, The Motor Effect, The Generator Effect, The AC Generator, Transformers	Using and rearranging formulae Interpreting diagrams using physical laws	The importance of electromagnetic devices in our daily lives, e.g. the generation of electricity
		P16 Space Formation of the Solar System, The Life History of a Star, Planets, Satellites and Orbits, The Expanding Universe, The	Orders of magnitude, units an and prefixes	Looking at how exoplanets are discovered and the implications for us. Commonality between all life on Earth – we are all made from stardust! (the elements produced when a star dies). Opportunities for discussion of

	P15 Electromagnetism: https://www.bbc.co.uk/bitesize/topics/z39ry4j P16 Space: https://www.bbc.co.uk/bitesize/topics/zsbyh39	Beginning and Future of the Universe		responsible space travel, including the environmental and economic consequences of launching.
	B14 Variation and Evolution: https://www.bbc.co.uk/bitesize/topics/zpb7cj6	**B14 Variation and Evolution** Variation, Evolution by Natural Selection, Selective Breeding, Genetic Engineering, Ethics of Genetic Technologies, Cloning, Adult Cell Cloning	Evaluating data in tables and graphs	Exploring differences between individuals, variation and evolution Genetic Engineering and selective breeding. Ethical debates on screening for inherited disorders, terminations, selective breeding, cloning and genetic engineering.

Term	Assessments	Topics	Skills	Personal Development
Spring 2	**Tests:** One 45 mark test at the end of each topic listed below: One 30 mark test at the end of each topic listed below: B15 Genetics and Evolution: https://www.bbc.co.uk/bitesize/topics/zpb7cj6	**B15 Genetics and Evolution** History of Genetics, Theories of Evolution and Accepting Darwin's Ideas, Evolution and Speciation, Evidence for Evolution, Fossils and Extinction – Including Why Extinction can Occur, Antibiotic Resistant Bacteria, Classification, New Systems of Classification	Using punnet squares and analysing genetic crosses Using timescales	The theory of evolution and how scientific ideas are developed over time due to evidence. Why objections may be raised by other scientists or e.g. by religious groups with an already held belief.

Term	Assessments	Topics	Skills	Personal Development
Summer	**Tests:** Summer Examinations: • Biology Paper 1 – 100 marks • Chemistry Paper 1 – 100 marks • Physics Paper 1 – 100 marks • Biology Paper 2 – 100 marks • Chemistry Paper 2 – 100 marks • Physics Paper 2 – 100 marks	**Biology Paper 1 and Paper 2 Revision** **Chemistry Paper 1 and Paper 2 Revision** **Physics Paper 1 and Paper 2 Revision** **Revision materials:** Biology: https://www.aqa.org.uk/subjects/science/gcse/biology8461/assessment-resources Chemistry:	Revision skills	

		https://www.aqa.org.uk/subjects/science/gcse/chemistry8462/assessment-resources Physics: https://www.aqa.org.uk/subjects/science/gcse/physics8463		