Curriculum Overview

PHYSICS

At Coquet Community School, we provide a broad and balanced, ambitious curriculum for all pupils. Our physics curriculum builds upon the knowledge and skills pupils have developed in first school through a well-planned and sequenced curriculum. Our curriculum plans follow the National Curriculum as well as drawing upon best practice within the field of physics. We draw on evidence-based research to ensure our curriculum is high quality and meets the needs of our pupils. We provide regular opportunities to revisit learning, so it becomes embedded in our pupils' long-term memory. Disciplinary knowledge such as scientific skills, data analysis and practical opportunities, are embedded within the topics covered.The overview of our plan is below:

Important note: Due to some teaching groups being shared between two or three science teachers, the order in which topics are taught may vary slightly between classes. Rest assured, all students will receive full coverage of the curriculum within the academic year.

Assessment: Assessments are provided in line with the school's assessment schedule and written feedback is calendared for pupils. We also provide live feedback as described below.						
Year	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
7*	**<u>Scientific skills</u>** Pupils will be given the opportunity to develop their scientific skills at the start of year 7. They will be introduced to laboratory safety including risks and hazards and will gain experience in using appropriate apparatus, set up and use a Bunsen burner. Pupils will deepen their knowledge of asking scientific questions, identifying and choosing appropriate variables, and plan their own investigations. **<u>Forces</u>** In this topic, students explore the concept of forces and how they affect the motion of objects.		**<u>Light and Sound</u>** In this topic, students investigate the properties and behaviour of light and sound waves. They learn how light travels in straight lines and how it can be reflected, refracted, and absorbed by different materials. The topic covers the structure of the eye and how we see, as well as the basics of colour and shadows. Students also explore sound waves, including how they are produced, how they travel through different media, and how the ear detects sound. Practical activities develop skills in observing wave behaviours, measuring speed and frequency, and interpreting data. This topic introduces key concepts of wave physics, helping students		**<u>Space</u>** In this topic, students explore the universe beyond Earth, focusing on the solar system, stars, and galaxies. They learn about the structure and motion of the solar system, including the planets, moons, and other celestial bodies. The topic covers the Earth's rotation and revolution, explaining day and night, seasons, and eclipses. Students also investigate the life cycle of stars and the vast scale of the universe. Through models, research, and observations, students develop an understanding of gravity's role in space and how scientific knowledge about space has developed over time. This topic fosters curiosity about astronomy and the nature	

	They learn to identify different types of forces, such as gravity, friction, and air resistance, and understand how forces can be represented with arrows showing magnitude and direction. Students investigate balanced and unbalanced forces and their effects on stationary and moving objects. The topic introduces basic concepts of speed, velocity, and acceleration, and covers practical applications such as levers, pulleys, and gears to understand mechanical advantage. Through hands-on experiments, students develop skills in measuring forces, recording data, and drawing conclusions, laying the foundation for further study in mechanics and energy. **Maths in Science** The *Maths in Science* strand develops students' confidence in applying mathematical skills to scientific contexts. Students learn to manipulate data, interpret graphs, calculate rates and ratios, and use units and significant figures accurately, using the appropriate skills required for their year. These skills support practical work, strengthen scientific reasoning, and prepare students for the quantitative demands of the Science curriculum.	understand everyday phenomena related to light and sound. **Maths in Science** The *Maths in Science* strand develops students' confidence in applying mathematical skills to scientific contexts. Students learn to manipulate data, interpret graphs, calculate rates and ratios, and use units and significant figures accurately, using the appropriate skills required for their year. These skills support practical work, strengthen scientific reasoning, and prepare students for the quantitative demands of the Science curriculum.	of our place in the cosmos.
8*	**Maths in Science** The *Maths in Science* strand develops students' confidence in applying mathematical skills to scientific contexts. Students learn to manipulate data, interpret graphs, calculate rates and ratios, and use units and significant figures accurately, using the appropriate skills required for their year. These skills support practical work, strengthen scientific reasoning, and prepare students for the quantitative demands of the Science curriculum. **Energy** In this topic, students investigate different forms	**Motion and Moments** In this topic, students explore the principles of motion and rotational forces (moments). They learn how to describe motion using speed, velocity, and acceleration, and interpret distance-time and velocity-time graphs. The topic also introduces forces that cause rotation, focusing on moments — the turning effect of a force — and how to calculate them using the formula moment = force × distance from pivot. Students investigate factors that affect moments, such as levers and balances, and apply these concepts to everyday machines and structures. Practical activities develop skills in measuring	**Electricity** In this topic, students explore the principles of electricity and how electric circuits work. They learn about current, voltage, resistance, and how these variables relate through Ohm's Law. Students build and analyse series and parallel circuits, using circuit diagrams and symbols to represent components. The topic covers the function of components such as resistors, bulbs, switches, and batteries. Students also investigate the safety aspects of electricity and the role of electricity in everyday life and technology. Through practical investigations, students develop skills in circuit construction,

	of energy and how energy is transferred, stored, and conserved. They learn about kinetic, potential, thermal, chemical, electrical, and nuclear energy, and explore energy changes in everyday systems. The topic covers the principle of conservation of energy and introduces energy efficiency and renewable versus non-renewable energy sources. Students develop practical skills by conducting experiments to measure energy transfer, calculate efficiency, and understand power. Through analysis and problem-solving, students deepen their understanding of how energy drives physical processes and the importance of sustainable energy use in society.	motion, analysing forces, and problem-solving, enhancing understanding of how forces influence both linear and rotational movement. **Maths in Science** The *Maths in Science* strand develops students' confidence in applying mathematical skills to scientific contexts. Students learn to manipulate data, interpret graphs, calculate rates and ratios, and use units and significant figures accurately, using the appropriate skills required for their year. These skills support practical work, strengthen scientific reasoning, and prepare students for the quantitative demands of the Science curriculum.	measurement of electrical quantities, and problem-solving, building a solid foundation for further study in physics and engineering. **Magnets** In this topic, students explore the properties and behaviour of magnets and magnetic fields. They learn about magnetic poles, attraction and repulsion, and investigate how magnetic forces act at a distance. Students study magnetic field patterns and discover how different materials respond to magnets. The topic also introduces electromagnets, exploring how electric currents can create magnetic fields and how the strength of an electromagnet can be changed. Students examine real-world applications of electromagnets, including their use in motors, relays, and lifting devices. Through practical investigations and data analysis, students develop their understanding of the relationship between electricity and magnetism and how these principles are applied in modern technology.
9	**Particles** In this topic, students deepen their understanding of the particle model to explain the properties and behaviour of solids, liquids, and gases. They study particle arrangement, motion, and energy in different states of matter, and explore processes such as melting, boiling, condensation, and sublimation. The topic covers the concepts of pressure in gases, diffusion, and the effects of temperature and volume changes on particle movement. Students use the particle model to explain changes of state and to interpret real-world phenomena. Practical activities enhance skills in observation, measurement, and data analysis, reinforcing the link between microscopic particle behaviour and macroscopic properties.	**Hot and Cold Physics** In this topic, students explore the concepts of heat, temperature, and thermal energy transfer. They learn the difference between heat and temperature and investigate how heat moves through conduction, convection, and radiation. The topic covers thermal expansion, insulation, and the effects of heating and cooling on different materials. Students examine temperature scales and measure temperature changes in practical investigations. Through experiments and real-life examples, students develop an understanding of how thermal energy affects matter and how energy transfer is relevant to everyday life and engineering.	**Waves** In this topic, students explore the properties and behaviour of waves and how they transfer energy. They learn about different types of waves, including transverse and longitudinal waves, and investigate key wave characteristics such as amplitude, wavelength, frequency, and wave speed. Students study how waves interact with matter through reflection, refraction, absorption, and transmission, and examine the electromagnetic spectrum and its uses in everyday life. The topic also explores the applications of waves in communication, imaging, and technology. Through practical investigations, mathematical analysis, and the interpretation of scientific data, students develop a deeper understanding of wave phenomena

	Maths in Science The *Maths in Science* strand develops students' confidence in applying mathematical skills to scientific contexts. Students learn to manipulate data, interpret graphs, calculate rates and ratios, and use units and significant figures accurately, using the appropriate skills required for their year. These skills support practical work, strengthen scientific reasoning, and prepare students for the quantitative demands of the GCSE course.	**Forces** In this topic, students build on prior knowledge to explore forces in greater depth. They study different types of forces, including gravitational, frictional, air resistance, and tension forces, and how these affect motion. The topic covers Newton's laws of motion, force diagrams, and the concepts of resultant force and equilibrium. Students learn to calculate force, mass, and acceleration using mathematical equations and explore factors affecting motion such as friction and terminal velocity. Practical investigations develop skills in measuring forces, analyzing motion, and applying scientific reasoning to real-world scenarios.	and their importance in the modern world.
10	**Combined Science** **Energy** In this topic, students explore energy stores, transfers, and conservation. They study kinetic, gravitational potential, elastic, thermal, and chemical energy, alongside equations for energy, power, and efficiency. Students investigate energy resources, electricity generation, and environmental impacts. Practical activities develop skills in measuring energy changes, analysing data, and applying equations to real-world situations.	**Combined Science** **Particle model of matter** In this topic, students explore the particle model and how it explains solids, liquids, and gases. They study particle arrangement, movement, changes of state, density, diffusion, and the effects of temperature and pressure. Students use particle diagrams and mathematical equations to explain observations. Practical activities develop skills in measuring mass and volume, calculating density, and investigating changes of state. **Atomic structure** In this topic, students explore atomic structure and the properties of subatomic particles: protons, neutrons, and electrons. They study atomic number, mass number, isotopes, electronic structure, and the development of the atomic model. Students learn to calculate numbers of subatomic particles and use the	**Combined Science** **Atomic Structure Continued** **Electricity** In this topic, students explore how electricity is generated, transferred, and used in circuits. They study current, potential difference, resistance, series and parallel circuits, and the factors affecting resistance. Students learn to use equations to calculate electrical quantities and analyse circuit diagrams. Practical activities develop skills in constructing circuits, taking measurements, investigating resistance, and applying scientific reasoning to real-world electrical systems.

		periodic table to identify elements. Activities develop skills in interpreting atomic data, constructing models, and explaining the structure of matter.	
10	**Separate science** **Energy** In this topic, students explore energy stores, transfers, and conservation. They study energy equations, power, efficiency, energy resources, and electricity generation. Students develop skills in calculations, data analysis, and evaluating energy technologies. **Electricity** In this topic, students explore how electricity behaves in circuits. They study current, potential difference, resistance, series and parallel circuits, and electrical power. Students develop practical skills in constructing circuits, taking measurements, and applying equations.	**Separate science** **Electricity (continued)** **Particle model of matter** In this topic, students explore how the particle model explains the behaviour of matter. They study density, changes of state, internal energy, and specific heat capacity. Students develop skills in using equations, interpreting particle diagrams, and analysing practical data.	**Separate science** **Atomic structure** In this topic, students explore the structure of atoms and the development of the atomic model. They study isotopes, radiation, radioactive decay, half-life, and the uses and risks of nuclear radiation. Students develop skills in interpreting decay data and applying mathematical relationships. **Waves** In this topic, students explore how waves transfer energy and information. They study transverse and longitudinal waves, properties of waves, electromagnetic radiation, sound, and wave behaviour. Students develop skills in using wave equations, interpreting diagrams, and analysing practical results.
11	**Combined Science** **Atomic structure** In this topic, students explore the structure of atoms and the development of the atomic model. They study isotopes, radiation, radioactive decay, half-life, and the uses and risks of nuclear radiation. Students develop skills in interpreting decay data and applying mathematical relationships. **Forces**	**Combined Science** **Forces Continued** **Waves** In this topic, students explore how waves transfer energy and information. They study transverse and longitudinal waves, wave properties, electromagnetic waves, sound, and wave behaviour. Students learn to use wave equations and interpret diagrams and data. Practical activities develop skills in investigating	**Combined Science** **Magnetism and electromagnetism** In this topic, students explore the relationship between electricity and magnetism. They study magnetic fields, electromagnets, the motor effect, generators, and transformers. Students learn to use diagrams and equations to explain electromagnetic effects. Practical activities develop skills in constructing circuits, investigating magnetic fields, and applying concepts to real-world technologies.

	In this topic, students explore how forces affect objects and their motion. They study resultant forces, Newton's laws, weight, momentum, stopping distances, and elasticity. Students learn to use force and motion equations and interpret graphs. Practical activities develop skills in measuring forces, analysing motion, and applying physics to real-world situations.	wave behaviour and analysing results.	**Preparation for external examinations**
11	**Separate science** **Forces** Continuing on from key stage 3, in this topic, students explore how forces affect objects and their motion. They study resultant forces, Newton's laws, momentum, stopping distances, and elasticity. Students develop skills in using force equations, analysing graphs, and applying physics to real-world situations.	**Separate science** **Magnetism and electromagnetism** Pupils will expand upon the knowledge of magnets and electromagnets they acquired in key stage 3. In this topic, students explore magnetic fields and how electricity and magnetism interact. They study permanent magnets, electromagnets, motors, generators, and transformers. Students develop skills in using diagrams, equations, and models to explain electromagnetic effects. **Space** In this topic, students explore the structure and evolution of the Universe. They study the Solar System, stars, satellites, orbits, red-shift, and the expanding Universe. Students develop skills in interpreting astronomical data and using equations to explain observations.	**Separate science** **Waves** In this topic, students explore how waves transfer energy and information. They study transverse and longitudinal waves, wave properties, electromagnetic waves, sound, and wave behaviour. Students learn to use wave equations and interpret diagrams and data. Practical activities develop skills in investigating wave behaviour and analysing results. **Preparation for external examinations**

Examples of on-going assessment and feedback in lessons
● Verbal feedback by the teacher to the whole class which pupils act on in the lesson; this is often evidenced using green pen. ● Pupils self-assess or peer-assess work with a clear framework guiding them through this. ● Teachers circulate to give 'LIVE' and immediate feedback as pupils are working independently.

- Pupils may complete mini quizzes or retrieval activities that revisit prior learning and receive verbal feedback.
- Use of tailored questioning by the teacher.