



POLARIS EDUCATION SCIENCE CURRICULUM

Curriculum Vision

"Different Pathways, Shared Success."

Every learner develops curiosity, knowledge, scientific understanding and the skills needed for lifelong learning, independence and future success. All learners leave Polaris with:

- ✓ Scientific knowledge relevant to everyday life
- ✓ Make informed decisions about health and wellbeing
- ✓ Understand environmental responsibility
- ✓ Confidence in applying evidence to make decisions
- ✓ Develop investigation and problem-solving skills
- ✓ A recognised qualification matched to their pathway
- ✓ Preparation for further education, employment, training and independent adulthood

Intent

Science develops curiosity, critical thinking and understanding of the world through Biology, Chemistry and Physics. Pupils progressively build substantive knowledge, practical investigation skills and scientific vocabulary from Year 1 through to accredited qualifications in Key Stage 4

Science Curriculum Implementation

The Polaris Science Curriculum has been carefully sequenced from Year 1 to Year 11 to ensure that pupils develop scientific knowledge, understanding and enquiry skills over time. The knowledge and skills identified within the National Curriculum have been mapped across year groups and organised into half-termly units, creating a coherent progression from early scientific exploration through to accredited qualifications at Key Stage 4.

A pupil who follows the curriculum journey from Year 1 to Year 9 will encounter all aspects of the National Curriculum in a logical and progressive sequence. Key concepts are deliberately revisited and built upon over time to strengthen understanding, improve retention and support long-term memory. Many scientific skills and concepts are introduced within one topic and then revisited across subsequent units, allowing pupils to make connections between different areas of science and deepen their understanding.

Teachers use the curriculum roadmap as the starting point for planning. They then adapt sequences of learning to meet the needs of the pupils in their class, taking account of prior knowledge, learning profiles and individual starting points. As a specialist setting, we recognise that many of our pupils have SEND and/or have experienced disrupted educational journeys. Consequently, chronological age does not always reflect a pupil's stage of learning.

Our curriculum is therefore designed to be both ambitious and flexible. Pupils may be working within different stages of the curriculum depending on the scientific concept being taught. For example, a pupil in Year 7 may access learning linked to a Year 3 pathway for light and sound whilst working at a Year 5 pathway for plants and living things. Teachers use assessment information to identify the most appropriate entry point and then plan learning that builds secure foundations before introducing new knowledge and skills.

The curriculum structure allows whole classes to explore similar scientific themes while ensuring that learning is appropriately adapted for individual pupils. This enables all learners to develop scientific understanding at a level that is right for them whilst remaining engaged in a shared curriculum experience.

At Key Stage 4, the curriculum continues to follow common scientific themes across all pathways. Pupils study similar overarching concepts at the same time, such as living systems, health and wellbeing, materials, chemical change, energy, forces and the environment. The level of challenge, depth of content and accreditation route are adapted according to the learner's pathway. This approach supports high-quality differentiation, shared practical experiences and smooth transitions between pathways where appropriate.

Practical investigation is embedded throughout the curriculum and is taught alongside scientific knowledge rather than as a standalone element. Pupils develop their ability to observe, question, investigate, measure, analyse and evaluate through meaningful practical experiences linked directly to the topics being studied. Working scientifically is therefore not taught in isolation but is woven throughout every stage of the science curriculum from Year 1 to Year 11.

This approach ensures that all pupils experience a science curriculum which is:

- **Ambitious** and aligned to the National Curriculum;
- **Sequential** and carefully planned to build knowledge over time;
- **Flexible** enough to meet individual SEND needs;
- **Practical** and enquiry-based;
- **Relevant** to everyday life and future aspirations; and
- **Focused on successful outcomes**, whether these are GCSE Combined Science Double Award, AQA Entry Level Certificate Science, ASDAN Science Short Course, further education, employment or independent living.

Through this model, every learner follows a pathway that develops curiosity, scientific understanding, independence and readiness for adulthood.

Curriculum structure

Key Stage 1

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Seasonal Changes <i>Children observe and describe weather associated with seasons, notice changes across the year, and begin measuring rainfall, temperature and daylight through simple observations.</i>	Weather Patterns	Animals Including Humans	Animal Groups & Needs	Plants	Habitats & Local Environment
Year 2	Seasonal Change <i>Children build on Year 1 by investigating how seasons affect plants, animals and humans. They compare seasonal data, identify patterns and explain why changes occur.</i>	Everyday Materials	Animals Including Humans	Living Things & Habitats	Plant Growth	Plants & Life Cycles

KS2 (year 3-6)

KS2 End Point

- ✓ Design and carry out investigations
- ✓ Use scientific vocabulary accurately

- ✔ Interpret and analyse data
- ✔ Explain scientific concepts using evidence
- ✔ Draw conclusions from observations and results

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year3	Light	Rocks, Soils & Fossils	Animals Including Humans	Forces & Magnets	Habitats	Plants
Year 4	Light & Shadows	States of Matter	Digestive System & Teeth	Electricity	Living Things & Classification	Plants
Year 5	Light including focus on Earth & Space	Properties of Materials	Human Growth & Development	Forces	Life Cycles	Evolution & Inheritance
Year 6	Light	Properties & Separation of Materials	Circulatory System	Electricity	Classification	Evolution & Inheritance

KS3 (Year 7-9)

End Point

- ✔ Apply scientific knowledge across disciplines
- ✔ Evaluate evidence critically
- ✔ Interpret data and identify patterns
- ✔ Plan investigations independently
- ✔ Explain scientific phenomena using key terminology

 Understand the role of science in everyday life						
	Light & Waves	Acids, Alkalis & Reactions	Skeletal System, Digestion & Nutrition	Sound & Wave Behaviour	Ecosystems	Materials & Their Uses
	Light & Optics	Reactivity & Chemical Processes	Respiration, Health & Human Systems	Sound & Energy Transfer	Ecosystems & Sustainability	Polymers & Materials
	Energy, Light & Radiation	Metals, Extraction & Reactions	Human Biology & Health	Sound & Wave Physics	Ecology & Energy Flow	Materials Science & Investigation

KEY STAGE 4 SCIENCE PATHWAYS

Pathway 1 Higher Attaining Learners Two GCSE Qualifications	End Point  GCSE Combined Science Double Award → Further Education → Apprenticeships → Science-related pathways					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Year 10 Cells & Organisation <i>(microscopy practicals)</i>	Health, Disease & Infection <i>(culturing organisms, data analysis)</i>	Materials, Particles & Atomic Structure <i>(separation and modelling practicals)</i>	Chemical Reactions & Bonding <i>(reaction rate investigations)</i>	Energy Transfers <i>(energy efficiency investigations)</i>	Ecology & the Environment <i>(sampling and fieldwork investigations)</i>
Year 11	Electricity <i>(circuit investigations)</i>	Waves, Light & Communication	Forces & Motion <i>(acceleration)</i>	Inheritance, Variation & Evolution	Integrated Exam Preparation & Practical Skills	GCSE Examinations

		<i>(wave and optics practicals)</i>	<i>and force investigations)</i>	<i>(genetics and evidence analysis)</i>		
Pathway 2 Entry Level 1-3 Qualification	AQA Entry Level Certificate Science (5960) → Supported Further Education → Vocational Learning → Preparation for Employment and Independent Living					
Year 10	Human Body <i>(pulse, fitness and health investigations)</i>	Health & Lifestyle <i>(diet and wellbeing studies)</i>	Everyday Materials <i>(properties testing)</i>	Elements, Compounds & Chemical Change <i>(mixing and reaction investigations)</i>	Energy & Forces <i>(movement and force investigations)</i>	Environment <i>(habitat and sustainability studies)</i>
Year 11	Electricity & Light <i>(simple circuit investigations)</i>	Communication, Sound & Light <i>(exploration and practical applications)</i>	Living Things & Adaptation <i>(classification and adaptation studies)</i>	Practical Scientific Investigation <i>(drawing together taught content)</i>	Portfolio Completion & Moderation	Accreditation
Pathway 3 ASDAN Qualification	ASDAN Science Short course End Point 🎓 ASDAN Science Short Course → Employability Skills → Community Participation → Independence Skills → Vocational Pathways					
Year 10	Human Machine (body systems	Health & Wellbeing	Materials in Everyday Life	Chemical Change	Forces & Motion (movement and	Environmental Science (local

	and healthy living)	(practical lifestyle investigations)	(testing and comparing materials)	(everyday reactions and applications)	transport projects)	environmental projects)
Year 11	Electricity & Technology (using and making circuits)	Communication & Space (light, sound and space investigations)	Living Things & Change (adaptation and survival)	Science Problem Solving Project	Portfolio Completion	Accreditation & Transition

Impact

The impact of the science curriculum is reflected in pupils' growing knowledge, confidence and independence. Through a carefully sequenced curriculum, pupils build scientific understanding over time, revisit key concepts and make meaningful connections between their learning and the world around them.

Pupils develop confidence in using scientific vocabulary, conducting investigations and applying scientific thinking to everyday situations. They become increasingly able to ask questions, interpret evidence, solve problems and explain their ideas using appropriate scientific language.

Our flexible curriculum ensures all learners make progress from their individual starting points. Through ongoing assessment, teachers identify what pupils know, remember and can do, enabling learning to build securely over time and preparing pupils for the next stage of their education.

Practical investigation is embedded throughout the curriculum, supporting pupils to develop observation, measurement, data handling, evaluation and communication skills. As they progress, pupils become more independent and resilient learners who can apply scientific knowledge across a range of contexts.

We know our curriculum is successful because pupils:

- Recall and apply previously taught knowledge.
- Use scientific vocabulary with increasing accuracy.
- Engage confidently in scientific enquiry and practical investigations.
- Make progress from their individual starting points.
- Explain scientific concepts using evidence.
- Achieve accreditation appropriate to their pathway.
- Are prepared for further education, employment, training and independent living.

End Impact Statement

By the time pupils leave Polaris, they are curious, confident learners who can apply scientific understanding to everyday life, make informed decisions, and progress successfully into adulthood through education, employment or independent living.