Pyrland School

Science

Curriculum Booklet for 2026 - 2027

Subject Lead: Miss Waller

Midsomer Norton Schools Partnership

Science Curriculum Intent:

Science education is one of the keys to social mobility. Science qualifications open the doors to many rewarding and interesting careers, and scientific literacy is critically important to being an informed citizen. Science is the most powerful method humans have for understanding the world. ***Sir John Holman***

We aim to ensure that our students not only develop a love for learning science but acquire the knowledge they need to become active and healthy citizens in modern society. We will enable them to reach their full potential, regardless of their background and be able to continue to study science beyond GCSE level should they choose to do so.

At Pyrland School, we aim to support all learners, regardless of background to achieve their full potential. Our curriculum is fully inclusive to meet the needs of students with lower-than-average reading ages and those with English as an Additional Language. Because of this we centre reading in the curriculum and provide opportunities for teachers to explicitly teach the reading and comprehension of scientific material. To meet the needs of all learners, our curriculum expectations are high and are ambitious for all.

We want our students to recognise that science seeks to explain the world, to learn about the differences between each science and to learn about the different ways scientists work. We break down the knowledge into key concepts which are taught in the separate disciplines of Biology, Chemistry and Physics from year 7 onward and carefully sequence them so that knowledge is introduced in a logical order over a 5-year journey. We want our students to retain this knowledge long term and be able to apply it to explain the world around them.

We aim to encourage the natural curiosity of our students and as such we ensure that they have the knowledge and skills required to learn through carrying out practical experiments and eventually to be able to design investigations which answer their own questions

We want our students to become scientifically literate. To be able to read and understand scientific articles in the news or in literature, to communicate their understanding effectively and with confidence to understand and engage with scientific issues so that they can form valid opinions and make informed decisions. Reading in our school is part of the culture. We want children to love reading and as such our science curriculum is designed to encourage reading.

Our curriculum is also designed to ensure that our students develop a knowledge of how science relates to social, moral, spiritual and cultural issues as well as the scope and limitations of science in this regard.

The science curriculum is therefore far more than just a list of knowledge we intend for students to learn; it is our hope and ambition for the scientists of the future.

Science Curriculum Implementation:

Over their 5-year journey at Pyrland, learners grow and develop into scientifically literate young adults. Our science team carefully sequences students' learning to ensure knowledge is introduced in a logical order, allowing them to retain and build on their knowledge. Key skills in science are developed throughout the academic year; for example, students will learn how scientists prepare and carry out experiments. Topics are sequenced carefully to build on prior learning, with topics being revisited, to ensure knowledge acquisition is in a logical order and to prevent any misconceptions becoming embedded. Literacy is a key focus, with the use of scientific terminology that enables students to confidently explain their understanding.

All lessons at Pyrland begin with a Do Now task. In science lessons, the questions for this task are designed to test recall of knowledge from the current topic and previous ones. This ensures students are getting plenty of retrieval practice, so they learn each concept thoroughly. Teachers will then engage students using a context-based starter, then plan and deliver a quality explanation. Students will have the opportunity to build on their learning through responsive teaching and then apply their new learning through a range of activities. Teachers then focus on supporting students who need more help with the content before leading a review of learning.

Key Stage 3
In Year 7 and Year 8 the focus is on building the foundational knowledge needed for future study. Throughout Year 9, students start the transition to the GCSE course with topics that bridge the end of Key Stage 3 and the beginning of Key Stage 4. Key knowledge and concepts from KS3 are carried forward into KS4 and this time is also used to make links to new knowledge. In Key Stage 3 we are following the central MNSP curriculum, taking advantage of collaboratively prepared resources and shared assessment tracking.

Key Stage 4
Most students follow the AQA Combined Science: Trilogy specification and some students in Year 10 opt to increase to the AQA Separate Science specification. Knowledge is carefully sequenced to ensure continuity of learning, ensuring knowledge is built over time, whilst allowing opportunities to revisit and embed key points. Both the Combined Science and the Separate Science courses align with the central MNSP curriculum, allowing us to take advantage of resources provided.

Our students are given time to evaluate assessments and correct misconceptions before moving onto new topics. This means our students are equipped to help themselves make progress and become self-aware, literate scientists ready for the demands of examinations and able to access future academic or vocational A level and Certificate courses

Allocated Curriculum Time:

	Year 7	Year 8	Year 9	KS4: Trilogy	KS4: Separate Science
Lessons per fortnight	**6**	**6**	**6**	**10**	**10**

Year 7 Programme of Study

Term	Curriculum Foci	Formal Assessment
1	**Introduction to Science** ● Introduction to How Science Works **Cells** ● Cells, tissues and organs **Particles** ● The different properties of matter in solid, liquid or gas form ● Particle model and changes of state ● Diffusion	**Assessment 1&2:** MNSP Baseline Assessment **Time:** 60 mins
2	**Elements, atoms and compounds** ● Introducing the chemical building blocks of all matter ● Elements and compounds **Forces** ● Measuring forces ● Drag forces and friction, balanced vs unbalanced forces	**Assessment 3:** Summative assessment for topics studied this term **Time:** 40 mins
3	**Energy** ● Understanding energy changes and transfers ● Thermal energy and temperature **Body structure and systems** ● Overview of various organ systems ● Respiratory system and nervous system	**Assessment 4:** Summative assessment for topics studied this term **Time:** 40 mins
4	**Plant and animal reproduction** ● Reproductive systems ● The menstrual cycle fertilisation and development of a foetus ● Flowers and pollination; fertilisation, germination and seed dispersal **Separating mixtures** ● Mixtures and solutions ● Evaporation, distillation and chromatography	**Assessment 5:** Summative assessment for topics studied this term **Time:** 40 mins
5	**Introduction to reactions** ● Different types of reactions ● Conservation of mass **Sound and Waves** ● Sound and waves ● Types of wave ● Sound; loudness and pitch	**Assessment 6:** End of Year Exam **Time:** 1 hour
6	**The Earth and Space** ● The solar system and phases of the moon ● Structure of the earth ● Rocks **Interdependence** ● Food chains. webs and ecosystems	

Year 8 Programme of Study

Term	Curriculum Foci	Formal Assessment
1	**The Periodic Table** ● Groups and Periods, metals and non-metals ● Group 1 metals, Group 7 and the noble gases **Photosynthesis and respiration** ● Photosynthesis and leaf structure ● Aerobic and anaerobic respiration	**Assessment 1&2:** Summative assessment for topics studied this term **Time:** 40 mins
2	**Motion and pressure** ● Motion graphs, speed and velocity ● Pressure and turning forces **Acids and alkalis** ● Features of acids and alkalis ● Litmus, universal indicator and making other indicators **Health and digestion** ● Energy in food and food tests ● Balanced diet and digestion, drugs, alcohol and smoking	**Assessment 3:** Summative assessment for topics studied this term **Time:** 40 mins
3	**Light** ● Reflection and refraction ● The eye and the camera **Metals and acids** ● Metals and acids. metals and oxygen, metals and water ● Displacement reactions	**Assessment 4:** Summative assessment for topics studied this term. **Time:** 40 mins
4	**Energy resources** ● The use of energy resources ● Energy in food **Chemical Energy** ● Endothermic and exothermic reactions ● Experimental Designs **Adaptations Variation and evolution** ● Competition and variation ● Natural selection, extinction, Adaptations, variation, inheritance	**Assessment 5:** Summative assessment for topics studied this term **Time:** 40 mins
5	**Magnets and Electromagnets** ● Magnetic fields and magnetic interactions ● Making magnets and electromagnets, electric motors **Microbes and Disease** ● Types and causes of disease ● Treating diseases	**Assessment 6:** End of year exam on topics from Y7 and Y8 **Time:** 1 hour
6	**Atmosphere** ● Composition of the Earth's atmosphere ● Resources from the ground **Electricity** ● Conductors and insulators ● Series and parallel circuits ● Resistance in circuits	

Year 9 Programme of Study

Term	Curriculum Foci	Formal Assessment
1	**Particle Model of Matter** ● Particle behaviour of states and the changes of state ● Density of materials **Cell Biology** ● Use microscopes to explore the structure of cells ● Identify the organelles and their functions ● Investigating the processes of diffusion and osmosis	**Assessment 1:** Summative assessment for topics studied this term **Time:** 40 mins
2	**Organic Chemistry** ● Hydrocarbons ● Fractional distillation ● Cracking **Atmospheric Chemistry** ● The Earth's early and present atmosphere ● Carbon footprints	**Assessment 2 :** Summative assessment for topics studied this term **Time:** 40 mins
3	**Organisation** ● Digestive system and investigating enzyme action, ● The circulatory system and Healthy Lifestyles ● Plant organisation and photosynthesis **Chemical Analysis** ● Separation techniques ● Purity and Formulations	**Assessment 3:** Summative assessment for topics studied this term **Time:** 40 mins
4	**Organisation (continued)** ● Digestive system and investigating enzyme action, ● The circulatory system and Healthy Lifestyles ● Plant organisation and photosynthesis **Atomic Structure (Physics)** ● Exploring the nucleus of the Atom ● Nuclear Radiation ● Medical applications of radiation	**Assessment 4:** Summative assessment for topics studied this term
5	**Knowledge Retrieval** ● Revision and preparation for end of year exam ● Each teacher will focus on key areas	**Assessment 5:** End of KS3 Exams. **Time:** 1 hour
6	**Using resources** ● Life cycle analysis ● Potable Water ● Water treatment **Rates of Reaction** ● Collision Theory ● Measuring the rate of reaction	**Assessment 6:** Summative Assessment **Time:** 40 mins

Year 10 Programme of Study:
Exam Board: AQA Trilogy OR AQA Biology, Chemistry and Physics

Term	Curriculum Foci	Formal Assessment
1	**Infection and Disease** ● Working with Microorganisms ● Disease transmission ● Plant diseases **Energy transfers and Energy resources** ● Calculating energy changes ● Energy Efficiency ● Renewable and non-renewable resources	**Assessment 1:** Summative assessment for topics studied this term **Time:** 40 mins
2	**Electricity** ● Electrical components and investigating the rules of circuits ● Electricity in the Home **Bioenergetics** ● Photosynthesis ● Respiration ● Uses of glucose **Homeostasis and Response** ● The central Nervous System and reaction times ● The Endocrine System ● Blood Sugar Levels ● The Menstrual Cycle, contraception and fertility	**Assessment 2:** Summative assessment for topics studied this term **Time:** 40 mins
3	**Homeostasis and Response** ● The central Nervous System and reaction times ● The Endocrine System ● Blood Sugar Levels ● The Menstrual Cycle, contraception and fertility	**Assessment 3:** Summative assessment for topics studied this term **Time:** 40 mins
4	**Forces** ● Investigating forces ● Resultant forces, analysing graphical data **Forces and Motion** ● Investigating Acceleration and terminal velocity Forces and Braking	**Assessment 4:** Summative assessment for topics studied this term **Time:** 40 mins
5	**Knowledge Retrieval** ● Revision and preparation for end of year exam	**Assessment 5:** Summative assessment for topics studied this term **Time:** 40 mins
6	**Knowledge Retrieval** ● Revision and preparation for end of year	**Assessment 6:** End of Y10 Mock GCSE Exams

Year 11 Programme of Study: Trilogy
Exam Board: AQA Trilogy

Term	Curriculum Foci	Formal Assessment
1	**Ecology** ● Habitats and biodiversity ● Food, chains webs and sampling techniques ● Effect of Humans on the Environment . **Chemical Changes** ● Reactivity Series ● Quantitative Chemistry ● Electrolysis and Energy Changes	**Assessment 1:** Summative assessment for topics studied this term **Time:** 40 mins
2	**Chemical Bonding** ● Ionic Bonding ● Covalent Bonding ● Metallic Bonding ● Structure Types **Inheritance, Variation and evolution** ● Genetics and Inheritance ● Inheritance and The Theory of Evolution ● Investigate how genetic engineering and cloning work **Quantitative Chemistry** ● Balancing equations ● Calculating moles ● Relative formula mass ● Conserving mass	**Assessment 2:** Mock GCSE Exams: Paper 1 Biology Paper 2 Chemistry Paper 1 Physics
3	**Energy Changes** ● Energy in reactions ● Exothermic and endothermic reactions **Waves** ● Properties and types of waves ● Reflection and refraction ● Electromagnetic spectrum **Magnetism** ● Types of magnets and magnetic fields ● The motor effect	**Assessment 3:** Summative assessment for topics studied this term **Time:** 40 mins
4	**Revision** ● Revision and preparation for exam ● Knowledge recall exercises	**Assessment 4:** Mock GCSE Exams: Paper 2 Biology Paper 1 Chemistry, Paper 2 Physics
5	**Revision** ● Revision and preparation for exam ● Knowledge recall exercises	**Targeted assessment and feedback for key cohorts**

Final Science GCSE Assessment Structure – AQA Trilogy

Component	Weighting (%)	Content	Proposed Examination Date
Biology	33.3%	**Paper 1 - 1 hour and 15 mins** ● Cell biology ● Organisation ● Infection and response ● Bioenergetics **Paper 2 - 1 hour and 15 mins** ● Homeostasis and response ● Inheritance, variation and evolution ● Ecology	May/June of Year 11
Chemistry	33.3%	**Paper 1 - 1 hour and 15 mins** ● Atomic structure and the periodic table ● Bonding, structure, and the properties of matter ● Quantitative chemistry ● Chemical changes ● Energy changes **Paper 2 - 1 hour and 15 mins** ● The rate and extent of chemical change ● Organic chemistry ● Chemical analysis ● Chemistry of the atmosphere ● Using resources	May/June of Year 11
Physics	33.3%	**Paper 1 - 1 hour and 15 mins** ● Energy ● Electricity ● Particle model of matter ● Atomic structure **Paper 2 - 1 hour and 15 mins** ● Forces ● Waves ● Magnetism and electromagnetism	May/June of Year 11

Please see exam board websites for up to date information:

https://www.aqa.org.uk/subjects/science/gcse/science-8464/specification

Final Science GCSE Assessment Structure – AQA Separate Science

Subject	Weighting	Content	Proposed Date of Examination
Biology	50% 50%	**Paper 1 - 1 hour and 45 mins** ● Cell biology ● Organisation ● Infection and response ● Bioenergetics **Paper 2 - 1 hour and 45 mins** ● Homeostasis and response ● Inheritance, variation and evolution ● Ecology	May/June of Year 11
Chemistry	50% 50%	**Paper 1 - 1 hour and 45 mins** ● Atomic structure and the periodic table ● Bonding, structure, and the properties of matter ● Quantitative chemistry ● Chemical changes ● Energy changes **Paper 2 - 1 hour and 45 mins** ● The rate and extent of chemical change ● Organic chemistry ● Chemical analysis ● Chemistry of the atmosphere ● Using resources	May/June of Year 11
Physics	50% 50%	**Paper 1 - 1 hour and 45 mins** ● Energy ● Electricity ● Particle model of matter ● Atomic structure **Paper 2 - 1 hour and 45 mins** ● Forces ● Waves ● Magnetism and electromagnetism ● Space	May/June of Year 11

Please see exam board websites for up to date information:

https://www.aqa.org.uk/subjects/biology/gcse/biology-8461/specification
https://www.aqa.org.uk/subjects/chemistry/gcse/chemistry-8462/specification
https://www.aqa.org.uk/subjects/physics/gcse/physics-8463/specification