



Science

Curriculum Booklet for 2025 - 2026

Subject Lead: Mr Haydn Kershaw

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, and to enable them to reach their full potential, regardless of their background, able to continue to study Science beyond GCSE should they choose to do so.

At Ansford Academy, we aim to support all learners, regardless of background, to achieve their full potential. Our curriculum is designed to engender high aspirations and to support our students to reach their full potential; we do this by providing them with the resources, support and challenge they need both in lessons and away from the classroom.

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 and 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 more than a description of the journey towards expertise. It is also the means by which to get there.

Science Curriculum Implementation

The school is in the process of transitioning its curriculum so that it follows the MNSP Science Curriculum. The new curriculum model is in place for Y7 to Y10. Y11 follow the legacy curriculum model but MNSP resources will be introduced and embedded where possible.

A range of differentiated activities are provided to students, including challenge, support and scaffolding. Students have regular low stakes tests and regular formative assessments to inform the next steps of learning and identify students who are not making the required levels of progress. Students are given time to evaluate their assessments and use these as a further learning tool to correct misconceptions.

Key Stage 3

As students come to Ansford Academy from many different feeder schools, we use the Trust's Baseline Assessment to accurately pinpoint gaps in prior learning. We teach in mixed ability groups classes, which in Year 7 is based around Tutor groups to support effective transition into Secondary School, and in Year 8 and 9 is fully mixed across the year group. All students have access to the same curriculum but those students with lower KS2 prior attainment are given support to reach the same objectives through scaffolding of tasks.

Over their 5-year journey, 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.

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.

Key Stage 4

Most students follow the AQA Combined Science: Trilogy specification and some extend onto 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 long term knowledge. Both courses follow a legacy scheme of learning but this will use resources and assessment opportunities that align across the Trust where possible.

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.

Year 10 is taught in bands, split loosely around higher and foundation tier entry.

Allocated Curriculum Time:

	Year 7	Year 8	Year 9	Year 10	Year 11
Lessons per fortnight	6	6	6	10	10

Separate Science groups also have 2 extra lessons in Year 10 and are in an option block in Year 11

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: MNSP Baseline Assessment Time: 40 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 2: 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 3: 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 4: 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 5: 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	Assessment 6: Summative assessment for content in Term 6 Time: 40 mins

Year 8 Programme of Study

Term	Curriculum Foci	Formal Assessment
1	The Periodic Table - Groups and Periods, metals and non-metals - Group 1 metals vs Group 7 and the noble gases Photosynthesis and respiration - Photosynthesis and leaf structure - Aerobic and anaerobic respiration	Assessment 1: MNSP Baseline Assessment 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 2: 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 3: 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 4: 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 5: 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	Assessment 6: Summative assessment for topics studied this term Time: 40 mins

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 Atmosphere and the Earth's Resources - The Earth's early and present atmosphere - The Carbon Cycle - Potable water	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 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 - 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 analyses - Carry out practical to identify gases - Distinguish between formulations and pure substances - Identify ions experimentally - How thermal energy is transferred through the universe Rates of Reaction - Collision Theory - Measuring the rate of reaction	Assessment 6: Summative Assessment Time: 40 mins

Year 10 GCSE Science Programme of Study (Trilogy and Separate Sciences (SS))
Exam Board: AQA

Term	Curriculum Foci	Formal Assessment
1	C1 Atomic Structure - Structure and history of the atom - The Periodic Table - Atoms, elements, compounds and isotopes P2 Electricity - Electrical components , current and p.d. - Electricity in the Home - Static electricity and electric fields (SS only)	Assessment 1: Summative assessment for topics studied this term Time: 40 mins
2	C2 Bonding and Structure and the Particles of Matter - Ionic, covalent and metallic bonding - Giant covalent structures - Intermolecular forces - Nanoparticles, (SS only) B3 Infection and Disease - Working with Microorganisms - Disease transmission - Monoclonal antibodies (SS only) - Plant diseases	Assessment 2: Summative assessment for topics studied this term Time: 40 mins
3	P1 Energy transfers and Energy resources - Calculating energy changes - Energy Efficiency - Renewable and non-renewable resources C4 Chemical Changes - Reactivity Series - Quantitative Chemistry - Electrolysis and Energy Changes - Titrations, (SS only) - Cells and batteries, (SS only) - Properties of transition metals (SS only)	Assessment 3: Summative assessment for topics studied this term Time: 40 mins
4	B4 Photosynthesis and respiration - Plant tissues (from B2) - Investigating photosynthesis - Respiration and the effects of exercise C5 Energy Changes - Energy in reactions: Exothermic and endothermic	Assessment 4: Summative assessment for topics studied this term Time: 40 mins
5	C3 Quantitative Chemistry - Balancing equations and conserving mass - Calculating moles - Relative formula mass - Calculate volumes of gases, % yield, (SS only) - atom economy, (SS only) - titrations (SS only)	Assessment 5: Summative assessment for topics studied this term Time: 40 mins
6	Knowledge Retrieval - Revision and preparation for end of year exam B7 Ecology - Habitats and biodiversity - Food, chains webs and sampling techniques - Effect of Humans on the Environment - Recycling nutrients in ecosystems. (SS only) B8 Space (SS only) - What is the universe made from (SS only) - Life cycles of stars (SS only) - Origin of the universe (SS only)	Assessment 6: End of Y10 GCSE Exams: Paper 1 for Bio Paper 2 for Chem Paper 1 for Phy

Year 11 GCSE Science Programme of Study (Trilogy and Separate Sciences (SS))
Exam Board: AQA

Term	Curriculum Foci	Formal Assessment
1	P5 Forces and Motion - Investigating forces - Resultant forces, analysing graphical data - Investigating Acceleration and terminal velocity - Forces and Braking - Moments, including levers and gears (SS only) - Momentum during collisions or explosions (SS only) B5 Homeostasis and Response - The Central Nervous System and reaction times - The Endocrine System - Blood Sugar Levels - The Menstrual Cycle, contraception and fertility C7 Organic Chemistry - Hydrocarbons - Homologous series and functional groups (SS only) - Fractional distillation - Cracking	Assessment 1: Summative assessment for topics studied this term Time: 40 mins
2	C8 Chemical Analysis - Separation techniques - Purity and Formulations P6 Waves - Properties and types of waves - Reflection and refraction - Electromagnetic spectrum - Applications of waves to everyday life (SS only) - Constructing wave diagrams (SS only) - Colours, (SS only) - Absorption and reflection (SS only)	Assessment 2: Mock GCSE Exams: Paper 1 Biology Paper 1 Chemistry, Paper 1 Physics
3	B6 Inheritance, Variation and evolution - Genetics and Inheritance - Inheritance and The theory of evolution - Investigate how genetic engineering and cloning work - DNA structure and protein synthesis (SS only) C9 Atmosphere and the Earth's Resources - The Earth's early and present atmosphere - The Carbon Cycle - Potable water	Assessment 3: Summative assessment for topics studied this term Time: 40 mins
4	P7 Magnetism - Types of magnets and magnetic fields - The motor effect - Electromagnetic induction and generators. (SS only) - Transformers (SS only) C10 Using resources - Life cycle analyses - Carry out practical to identify gases - Distinguish between formulations and pure substances - Identify ions experimentally - How thermal energy is transferred through the universe - Corrosion, rusting and alloys (SS only) - Ceramics, polymers and composite materials (SS only) - Explain the Haber Process, and NPK fertilisers (SS only)	Assessment 4: Mock GCSE Exams: Paper 2 Biology Paper 2 Chemistry, Paper 2 Physics
5	Revision - Revision and preparation for exam - Knowledge recall exercises	Targeted assessment and feedback for key cohorts

Revision and Support

There are many ways in which you can support your child in the study of Science such as:

- Create revision resources: mind maps, storyboards, cue cards
- Purchase CGP Science revision guide (this can be done through parent pay at a discounted price)
- Use DRIP sheets and practice papers to consolidate knowledge and practice exam technique (these are distributed to students by class teachers but electronic copies can be found via [science curriculum online](#))
- Encourage attendance to additional modular revision sessions (these run after school between January and April)
- Use online revision resources
 - BBC Bitesize: <https://www.bbc.co.uk/bitesize/examspecs/z8r997h>
 - Seneca: <https://senecalearning.com/en-GB/>

Final GCSE Assessment Structure - Combined Science

Subject	Weighting	Content	Proposed Date of Examination
Biology	33.3%	Paper 1 - 1 hour and 15 mins 1. Cell biology 2. Organisation 3. Infection and response 4. Bioenergetics Paper 2 - 1 hour and 15 mins 1. Homeostasis and response 2. Inheritance, variation and evolution 3. Ecology	May/June of Year 11
Chemistry	33.3%	Paper 1 - 1 hour and 15 mins 1. Atomic structure and the periodic table 2. Bonding, structure, and the properties of matter 3. Quantitative chemistry 4. Chemical changes 5. Energy changes Paper 2 - 1 hour and 15 mins 1. The rate and extent of chemical change 2. Organic chemistry 3. Chemical analysis 4. Chemistry of the atmosphere 5. Using resources	May/June of Year 11
Physics	33.3%	Paper 1 - 1 hour and 15 mins 1. Energy 2. Electricity 3. Particle model of matter 4. Atomic structure Paper 2 - 1 hour and 15 mins 1. Forces 2. Waves 3. 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/combined-science-trilogy-8464>

Final GCSE Assessment Structure - Separate Sciences

Subject	Weighting	Content	Proposed Date of Examination
Biology	33.3%	Paper 1 - 1 hour and 45 mins 5. Cell biology 6. Organisation 7. Infection and response 8. Bioenergetics Paper 2 - 1 hour and 45 mins 4. Homeostasis and response 5. Inheritance, variation and evolution 6. Ecology	May/June of Year 11
Chemistry	33.3%	Paper 1 - 1 hour and 45 mins 6. Atomic structure and the periodic table 7. Bonding, structure, and the properties of matter 8. Quantitative chemistry 9. Chemical changes 10. Energy changes Paper 2 - 1 hour and 45 mins 6. The rate and extent of chemical change 7. Organic chemistry 8. Chemical analysis 9. Chemistry of the atmosphere 10. Using resources	May/June of Year 11
Physics	33.3%	Paper 1 - 1 hour and 45 mins 5. Energy 6. Electricity 7. Particle model of matter 8. Atomic structure Paper 2 - 1 hour and 45 mins 4. Forces 5. Waves 6. Magnetism and electromagnetism 7. Space	May/June of Year 11

Please see exam board websites for up to date information:

<https://www.aqa.org.uk/subjects/science/gcse/biology-8461>

<https://www.aqa.org.uk/subjects/science/gcse/chemistry-8462>

<https://www.aqa.org.uk/subjects/science/gcse/physics-8463>