



St Dunstan's School
GLASTONBURY



**Science Curriculum Booklet
2024-25**

Subject Lead: Ms Claire Hutchinson

Subject Curriculum Intent:

“ We will always have STEM with us. Some things will drop out of the public eye and will go away, but there will always be science, engineering and technology. And there will always be mathematics.”

Katherine Johnson

At St Dunstan’s we aim to ignite a lifelong passion for science in our students and equip them with the knowledge and confidence to question and pursue the scientific world. We believe that all students should have the right to a broad scientific education which develops critical thinking and evaluation of ideas that in turn allows our students to understand and explain the world around them as well as become responsible citizens.

St Dunstan’s is a comprehensive school that admits students with a wide range of prior ability and our curriculum is designed to bridge this gap whilst reflecting the needs of our students and allowing all to achieve their full potential. Our aim is to support and stretch every student and our curriculum has been designed with the different educational needs in mind.

Our Key Stage 3 curriculum exceeds that of the National Curriculum and builds on the knowledge gained during their Key Stage 2 education therefore filling gaps in knowledge and scientific literacy and fully preparing our students for the Key Stage 4 course. At Key Stage 4 we offer the AQA double Science award (trilogy) which fully prepares our students for various science subjects in further education including A Levels, T Levels and BTech courses. In addition, we offer students the opportunity to choose AQA single science as an elective subject that is taught independently of the double award.

As with many communities, our students arrive at St Dunstan’s with different experiences of exploring the wider and local environment around us and we have a strong focus of providing opportunities for our students to close gaps in the cultural capital and therefore remove barriers for our disadvantaged students’ future learning.

The St Dunstan’s science curriculum intends to instil the St Dunstan’s core values of Truth; Resilience; Ambition; Community and Kindness (TRACK) as follows:

- **Truth:** the curriculum intent is to provide students with the scientific fact and theories needed to make informed observations and decisions on their future and the future of the environmental as a whole as well as have the confidence to question misunderstandings.
- **Resilience:** The curriculum is designed to provide students with the ability to apply scientific reasoning to problem solving and have the confidence to adapt to the ever changing information available.
- **Ambition:** The curriculum is designed to give all learners the ability to study challenging content that allows all to flourish and provide opportunities for students to achieve expected outcomes and develop a love and understanding for science that can be taken further in education.
- **Community:** The curriculum intent is to give all students the opportunity to develop an understanding and appreciation of science that will allow them to see the relationship between community and scientific development. We strive to give our students opportunities to experience ‘science in the real world’ that supports the in class learning with real time examples.
- **Kindness:** The curriculum is used to supply difficult and complicated information that effect people’s day to day lives and our students are rewarded for their ability to learn and enquire with kindness to their fellow pupils as well as their surroundings allowing for a cohesive and safe learning environment.

Allocated Curriculum Time:

Year Group	Y7	Y8	Y9	Y10	Y11
Fortnightly lesson allocation in hours	6	6	6	9	9

Curriculum Plan: Year 7

Term	Curriculum Foci Areas	Assessment Criteria
1	<p>Introduction to Science</p> <ul style="list-style-type: none"> ● Introduction to How Science Works <p>Cells</p> <ul style="list-style-type: none"> ● Cells, tissues and organs <p>Particles</p> <ul style="list-style-type: none"> ● The different properties of matter in solid, liquid or gas form ● Particle model and changes of state ● Diffusion 	<p>Assessment 1: MNSP Baseline Assessment</p>
2	<p>Elements, atoms and compounds</p> <ul style="list-style-type: none"> ● Introducing the chemical building blocks of all matter ● Elements and compounds <p>Forces</p> <ul style="list-style-type: none"> ● Measuring forces ● Drag forces and friction, balanced vs unbalanced forces 	<p>Assessment 2: Summative assessment for topics studied this term</p>
3	<p>Energy</p> <ul style="list-style-type: none"> ● Understanding energy changes and transfers ● Thermal energy and temperature <p>Body structure and systems</p> <ul style="list-style-type: none"> ● Overview of various organ systems ● Respiratory system and nervous system 	<p>Assessment 3: Summative assessment for topics studied this term Literacy Task: Healthy Body Systems</p>
4	<p>Plant and animal reproduction</p> <ul style="list-style-type: none"> ● Reproductive systems ● The menstrual cycle fertilisation and development of a foetus ● Flowers and pollination; fertilisation, germination and seed dispersal <p>Separating mixtures</p> <ul style="list-style-type: none"> ● Mixtures and solutions ● Evaporation, distillation and chromatography 	<p>Assessment 4: Summative assessment for topics studied this term</p>
5	<p>Introduction to reactions</p> <ul style="list-style-type: none"> ● Different types of reactions ● Conservation of mass <p>Sound and Waves</p> <ul style="list-style-type: none"> ● Sound and waves ● Types of wave ● Sound; loudness and pitch 	<p>Assessment 5: End of year exam on content from Y7</p>
6	<p>The Earth and Space</p> <ul style="list-style-type: none"> ● The solar system and phases of the moon ● Structure of the earth ● Rocks <p>Interdependence</p> <ul style="list-style-type: none"> ● Food chains, webs and ecosystems 	<p>Assessment 6: Summative assessment for content in Term 6 Literacy Task: Space</p>

Curriculum Plan: Year 8

Term	Curriculum Foci Areas	Assessment Criteria
1	<p>The Periodic Table</p> <ul style="list-style-type: none"> • Groups and Periods, metals and non-metals • Group 1 the alkali metals vs Group 7 the halogens • Group 0 the noble gases <p>Photosynthesis and respiration</p> <ul style="list-style-type: none"> • Photosynthesis and leaf structure • Aerobic and anaerobic respiration 	<p>Assessment 1: MNSP Baseline Assessment</p>
2	<p>Motion and pressure</p> <ul style="list-style-type: none"> • Motion graphs • Speed and velocity • Pressure and turning forces <p>Acids and alkalis</p> <ul style="list-style-type: none"> • Features of acids and alkalis • Litmus, universal indicator and making other indicators <p>Health and digestion</p> <ul style="list-style-type: none"> • Energy in food and food tests • Balanced diet and digestion • Drugs, alcohol and smoking 	<p>Assessment 2: Summative assessment for topics studied this term</p>
3	<p>Light</p> <ul style="list-style-type: none"> • Reflection and refraction • The eye and the camera <p>Metals and acids</p> <ul style="list-style-type: none"> • Metals and acids, metals and oxygen, metals and water • Displacement reactions 	<p>Assessment 3: Summative assessment for topics studied this term.</p>
4	<p>Energy resources</p> <ul style="list-style-type: none"> • The use of energy resources • Energy in food <p>Chemical Energy</p> <ul style="list-style-type: none"> • Endothermic and exothermic reactions • Experimental Designs <p>Adaptations Variation and evolution</p> <ul style="list-style-type: none"> • Competition and variation • Natural selection and extinction • Adaptations, variation and inheritance 	<p>Assessment 4: Summative assessment for topics studied this term</p>
5	<p>Magnets and Electromagnets</p> <ul style="list-style-type: none"> • Magnetic fields and magnetic interactions • Making magnets and electromagnets • Electric motors <p>Microbes and Disease</p> <ul style="list-style-type: none"> • Types and causes of disease • Treating diseases 	<p>Assessment 5: End of year exam on topics from Y7 and Y8</p>
6	<p>Atmosphere</p> <ul style="list-style-type: none"> • Composition of the Earth's atmosphere • Resources from the ground <p>Electricity</p> <ul style="list-style-type: none"> • Conductors and insulators • Series and parallel circuits • Resistance in circuits 	<p>Assessment 6: Summative assessment for topics studied this term</p>

Curriculum Plan: Year 9

Term	Curriculum Foci Areas	Assessment Criteria
1	<p>Using resources</p> <ul style="list-style-type: none"> Life cycle analyses Carry out practical to identify gases Distinguish between formulations and pure substances Identify ions experimentally Explore how thermal energy is transferred through the universe <p>Cell Biology</p> <ul style="list-style-type: none"> Use microscopes to explore the structure of cells Identify the organelles and their functions Investigating the processes of diffusion and osmosis 	<p>Assessment 1: Summative assessment for topics studies this term</p>
2	<p>Atmosphere and the Earth's Resources</p> <ul style="list-style-type: none"> The Earth's early and present atmosphere The Carbon Cycle Potable water 	<p>Assessment 2 : Summative assessment for topics studies this term</p>
3	<p>Particle model of matter</p> <ul style="list-style-type: none"> Particle behaviour of states and the changes of state Density of materials <p>Atomic Structure</p> <ul style="list-style-type: none"> Exploring the nucleus of the Atom Nuclear Radiation Medical applications of Radiation 	<p>Assessment 3: Summative assessment for topics studies this term</p>
4	<p>Organisation</p> <ul style="list-style-type: none"> Digestive system and investigating enzyme action, The circulatory system and Healthy Lifestyles Plant organisation and photosynthesis <p>Chemical Analysis</p> <ul style="list-style-type: none"> Separation techniques Purity and Formulations 	<p>Assessment 4: Summative assessment for topics studies this term</p>
5	<p>Organic Chemistry</p> <ul style="list-style-type: none"> Hydrocarbons Fractional distillation Cracking <p>Knowledge Retrieval</p> <ul style="list-style-type: none"> Revision and preparation for end of year exam Each teacher will focus on key areas 	<p>Assessment 5: End of year exams.</p>
6	<p>Knowledge Retrieval</p> <ul style="list-style-type: none"> Revision and preparation for end of year exam Each teacher will focus on key areas <p>Photosynthesis and respiration</p> <ul style="list-style-type: none"> Investigating photosynthesis Respiration and the effects of exercise. 	<p>Assessment 6: Summative Assessment</p>

Curriculum Plan: Year 10 Science

Exam Board: AQA

Term	Curriculum Foci Areas Assessment Criteria	Assessment Criteria
1	<p>Infection and Disease</p> <ul style="list-style-type: none"> Working with Microorganisms Disease transmission Plant diseases <p>Energy transfers and Energy resources</p> <ul style="list-style-type: none"> Calculating energy changes Energy Efficiency Renewable and non-renewable resources 	<p>Assessment 1: Summative assessment for topics studied this term</p>
2	<p>Electricity</p> <ul style="list-style-type: none"> Electrical components and investigating the rules of circuits. Electricity in the Home <p>Rates of Reaction</p> <ul style="list-style-type: none"> Collision Theory Measuring the rate of reaction 	<p>Assessment 2: Summative assessment for topics studied this term</p>
3	<p>Bonding and Structure and the Particles of Matter</p> <ul style="list-style-type: none"> Ionic, covalent and metallic bonding Giant covalent structures Intermolecular forces <p>Energy Changes</p> <ul style="list-style-type: none"> Energy in reactions Exothermic and endothermic reactions 	<p>Assessment 3: Summative assessment for topics studied this term</p>
4	<p>Atomic Structure</p> <ul style="list-style-type: none"> Structure and history of the atom The Periodic Table Atoms, elements, compounds and isotopes. <p>Forces</p> <ul style="list-style-type: none"> Investigating forces Resultant forces Analysing graphical data 	<p>Assessment 4: Summative assessment for topics studied this term</p>
5	<p>Forces and Motion</p> <ul style="list-style-type: none"> Investigating Acceleration and terminal velocity Forces and Braking <p>Magnetism</p> <ul style="list-style-type: none"> Types of magnets and magnetic fields The motor effect <p>Knowledge Retrieval</p> <ul style="list-style-type: none"> Revision and preparation for end of year exam 	<p>Assessment 5: Summative assessment for topics studied this term</p>
6	<p>Knowledge Retrieval</p> <ul style="list-style-type: none"> Revision and preparation for end of year exam <p>Homeostasis and Response</p> <ul style="list-style-type: none"> The central Nervous System and reaction times. The Endocrine System Blood Sugar Levels The Menstrual Cycle, contraception and fertility. 	<p>Assessment 6: End of year exams: Paper 1 for Bio, Paper 2 for Chem, Phy</p>

Curriculum Plan: Year 10 Single Science Option

Exam Board: AQA

Term	Curriculum Foci Areas Assessment Criteria	Assessment Criteria
1	<p>Cell Biology</p> <ul style="list-style-type: none"> Prokaryotic reproduction Culturing microorganisms: aseptic techniques <p>Particle Models of Matter</p> <ul style="list-style-type: none"> Pressure in gases <p>Atomic Structure</p> <ul style="list-style-type: none"> Hazards and uses of radioactive emissions. Background radiation Nuclear fission and fusion <p>Organic Chemistry</p> <ul style="list-style-type: none"> Reactions of alkenes and alcohols Synthetic and naturally occurring polymers 	<p>Assessment 1: Summative assessment for topics studied this term</p>
2	<p>Chemical Analysis</p> <ul style="list-style-type: none"> Identification of ions <p>Using Materials</p> <ul style="list-style-type: none"> Cause and prevention of corrosion The Haber process Alloys 	<p>Assessment 2: Summative assessment for topics studied this term</p>
3	<p>Infection and Response</p> <ul style="list-style-type: none"> Monoclonal Antibodies Detection and Identification of plant diseases Plant defences <p>Electricity</p> <ul style="list-style-type: none"> Static electricity <p>Energy Changes</p> <ul style="list-style-type: none"> Chemical cells and fuel cells 	<p>Assessment 3: Summative assessment for topics studied this term</p>
4	<p>Ecology</p> <ul style="list-style-type: none"> Decomposition Impact of environmental change Trophic levels and pyramids of biomass Food security and sustainable fisheries Use of biotechnology <p>Forces</p> <ul style="list-style-type: none"> Moments and levers Pressure differences Changes in momentum 	<p>Assessment 4: Summative assessment for topics studied this term</p>
5	<p>Atomic Structure</p> <ul style="list-style-type: none"> Properties of transition metals <p>Bonding and Structure</p> <ul style="list-style-type: none"> Nanoparticles 	<p>Assessment 5: Summative assessment for topics studied this term</p>
6	<p>Knowledge Retrieval</p> <ul style="list-style-type: none"> Revision and preparation for end of year exam 	<p>Assessment 6: End of year exams: Paper 1 for Bio, Paper 2 for Chem, Phy</p>

Curriculum Plan: Year 11 Science

Exam Board: AQA

Term	Curriculum Foci Areas Assessment Criteria	Assessment Criteria
1	Ecology <ul style="list-style-type: none">Habitats and biodiversityFood, chains webs and sampling techniquesEffect of Humans on the Environment Chemical Changes <ul style="list-style-type: none">Reactivity SeriesQuantitative ChemistryElectrolysis and Energy Changes Waves <ul style="list-style-type: none">Properties and types of wavesReflection and refractionElectromagnetic spectrum	Assessment 1: Summative assessment for topics studies this term
2	Inheritance, Variation and evolution <ul style="list-style-type: none">Genetics and InheritanceInheritance and The theory of evolutionInvestigate how genetic engineering and cloning work	Assessment 2: Mock exams paper 1 Biology, paper 2 Chemistry, Physics
3	Quantitative Chemistry <ul style="list-style-type: none">Balancing equationsCalculating molesRelative formula massConserving mass	Assessment 3: Summative assessment for topics studies this term
4	Revision <ul style="list-style-type: none">Revision and preparation for examKnowledge recall exercises	Assessment 4: Mock exams Paper 2 Biology, paper 1 Chemistry, Physics
5	Revision and Exams	Targeted assessment and feedback for key cohorts

Science Final Assessment Structure:

Subject	Weighting	Content	Proposed Date of Examination
Biology	33.3%	Paper 1 1 hour 15 minutes Paper 2 1 hour 15 minutes	May/June of Year 11
Chemistry	33.3%	Paper 1 1 hour 15 minutes Paper 2 1 hour 15 minutes	May/June of Year 11
Physics	33.3%	Paper 1 1 hour 15 minutes Paper 2 1 hour 15 minutes	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>