



SCIENCE PATHWAY
Taunton Preparatory School
&
Taunton School Senior





Taunton Prep School

Science in Years 3 to 6

In Years 3 to 6, Scientific understanding develops gradually from a wide range of experience and is reinforced by doing and discussing.

<p style="text-align: center;">Year 3 Topics</p> <p>Pupils have two double lessons per week, taught in forms, by a class teacher.</p> <ul style="list-style-type: none"> • Teeth and Eating • Characteristics of Materials • Rocks and Soils • Magnets and Springs • Helping Plants Grow Well • Light and Shadows 	<p style="color: red;">Skills</p> <ul style="list-style-type: none"> • Pupils will experience events, not just once, but often enough to be able to make simple predictions. • They will learn how to make observations and to record these logically and accurately. • They will use experimental data to produce simple graphs and to draw relevant conclusions. • They will need to understand the underlying vocabulary and use this in describing their experience in increasing detail. • To introduce and develop the key skills of teamwork, resilience, independence and leadership.
<p style="text-align: center;">Year 4 Topics</p> <p>Pupils have two double lessons per week, taught in forms, by a class teacher.</p> <ul style="list-style-type: none"> • Moving and Growing • Solids, Liquids and how they can be separated • Keeping Warm • Friction • Circuits and Conductors • Habitats 	
<p style="text-align: center;">Year 5 Topics</p> <p>Pupils have two double lessons per week, taught in forms, by a subject specialist.</p> <ul style="list-style-type: none"> • Keeping Healthy • Gases Around Us • Changing Sounds • Life Cycles • Earth, Sun and Moon • 	
<p style="text-align: center;">Year 6 Topics</p> <p>Pupils have two double lessons per week, taught in sets, by a subject specialist</p> <ul style="list-style-type: none"> • Interdependence and Adaptation • Reversible and Irreversible Changes • Balances and Unbalances forces • Changing Circuits • Micro-organisms • More About Dissolving • How We See Things 	



Science in Years 7 and 8

Pupils have three double lessons per week, taught in sets, by a subject specialist.

Science in Years 7 and 8 revisits earlier topics but the emphasis is now on developing concepts which help to explain why things happen. Pupils learn to read instructions with increasing accuracy, they improve graph skills and use these to draw conclusions. They begin to use their imaginations to explore possible explanations.

<p style="text-align: center;">Year 7 Topics</p> <p>Biology</p> <ul style="list-style-type: none"> • Cells and their Functions • Reproduction • Microbes and Disease <p>Chemistry</p> <ul style="list-style-type: none"> • Acids and Alkalis • Simple Chemical Reactions • Particle Model of Solids, Liquids and Gases • Solutions <p>Physics</p> <ul style="list-style-type: none"> • Electrical Circuits • Forces and their Effects • The Solar System and Beyond 	<p>Skills</p> <ul style="list-style-type: none"> • Scientific understanding is not just a body of knowledge but a way of thinking about a problem. Pupils should not just ask the question 'What'?, but also 'Why'? • Understanding is evolved by asking a clear question, predicting a possible outcome, planning a way of testing it in a controlled and reproducible manner, and logically analysing and evaluating the evidence. • Things which are too small or too fast to see, or too large to comprehend can often be represented with a simple model. Experimenting with a model may suggest more about the original concept, and understanding grows. • To develop and embed the key skills of teamwork, resilience, independence and leadership.
<p style="text-align: center;">Year 8 Topics</p> <p>Biology</p> <ul style="list-style-type: none"> • Food and Digestion • Respiration • Ecological Relationships <p>Chemistry</p> <ul style="list-style-type: none"> • Atoms and Elements • Compounds and Mixtures <p>Physics</p> <ul style="list-style-type: none"> • Heating and Cooling • Magnets and Electromagnets • Light • Sound and Hearing 	



Taunton Senior School

Science in Year 9

Pupils have three double lessons per week, taught by a subject specialist. Science is not set in year 9.

Topics	Skills
<p>Biology</p> <ul style="list-style-type: none"> • Cell structure and function • Microscopy • Culturing microorganisms • Enzymes and digestion • Movement of substances in and out of cells • Health and cancer <p>Chemistry</p> <ul style="list-style-type: none"> • Chemical Fundamentals • Atomic Structure and the Periodic Table • Chemical Measurements • Chemical Purity • Chemistry of the Atmosphere <p>Physics</p> <ul style="list-style-type: none"> • Heat Transfers – to include evaporation and condensation • Data Analysis and Presentation in Science • Energy Resources and stores • Space Physics 	<ul style="list-style-type: none"> • Improvement in use of scientific terminology for extended writing • To recognise, interpret and draw graphical representations of experimental data

Science in Year 10 and 11

For each science discipline, pupils have one double and one single per week in Year 10 followed by one double and two singles per week in Year 11. Pupils are taught in ability sets within bands, either triple award or combined science.

Topics (separate Science only – in bold)	Skills
<p>Biology</p> <ul style="list-style-type: none"> • Organisation, physiology • Infection and response • Bioenergetics, respiration, photosynthesis • Homeostasis and response • Inheritance, variation and evolution • Ecology and biodiversity <p>Chemistry</p> <ul style="list-style-type: none"> • Bonding, structure and tests for iron • Reactivity of metals • Quantitative chemistry • Hydrocarbons • Acids, Ph, salts and titrations • Energy and electrolysis • Rates of reactions and equilibrium • Organic chemistry and using resources <p>Physics</p> <ul style="list-style-type: none"> • Electricity • Particle model of matter • Atomic structure • Energy • Waves • Forces • Magnetism and Elctromagnetism • Space Physics 	<ul style="list-style-type: none"> • Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures • Apply knowledge and understanding of: scientific ideas; scientific enquiry; techniques and procedures • Analyse information and ideas to: interpret and evaluate; made judgments and draw conclusions; develop and improve experimental procedures • Year Ten science study lessons; focus on maths skills



A Level Science in Years 12 and 13

Topics	Skills
<p>Biology</p> <ul style="list-style-type: none"> • Cell biology and biochemistry • Exchange and transport • Classification and biodiversity • disease • Communication, homeostasis • Metabolisms, respiration and photosynthesis • Genetics, evolution and manipulation of genomes • Ecosystems, populations and sustainability <p>Chemistry</p> <ul style="list-style-type: none"> • Atoms and reactions • Electrons, bonding and structure • The periodic table • Physical chemistry • Basic organic concepts and hydrocarbons • Alcohols, haloalkanes and analysis • Rates, equilibrium and pH • Energy and electrode potentials • Transition elements and redox • Aromatic compounds, carbonyls and acids • Chromatography and spectroscopy <p>Physics</p> <ul style="list-style-type: none"> • Measurements and their Errors • Particles and Radiation • Waves • Mechanics and materials • Electricity • Further Mechanics and Thermal physics • Fields and their consequences • Nuclear Physics • Engineering Physics 	<ul style="list-style-type: none"> • Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures. • Apply knowledge and understanding of scientific ideas, processes, techniques and procedures: <ul style="list-style-type: none"> – in a theoretical context – in a practical context – when handling qualitative data – when handling quantitative data. • Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to: <ul style="list-style-type: none"> – make judgements and reach conclusions – develop and refine practical design and procedures. • Practical skills are developed throughout the courses and lead to a final endorsements of practical skills. • Mathematical skills are developed throughout the course and are included in the terminal examinations. • ICT literacy and research skills are developed through PAGs



IB Science in Year 12 and 13

Topics (Higher Level topics only - in bold)	Skills
<p>Biology</p> <ul style="list-style-type: none"> • cell biology • molecular biology • genetics • ecology • evolution and biodiversity • human physiology • nucleic acids • metabolism, cell respiration and photosynthesis • plant biology • genetics and evolution • animal physiology <p>Chemistry</p> <ul style="list-style-type: none"> • Stoichiometric relationships and uncertainties • Atomic structure • Periodicity and d-block elements • Chemical bonding and structure • Energetics and thermochemistry • Chemical kinetics • Equilibrium • Acids and bases • Redox processes • Organic chemistry • Analytical chemistry • Option topic – materials, biochemistry, energy, or medicinal chemistry <p>Physics</p> <ul style="list-style-type: none"> • Measurements and Uncertainties • Mechanics • Thermal Physics • Waves • Electricity and Magnetism • Circular Motion and gravitation • Atomic, nuclear and particle physics • Energy Production • Wave phenomena • Fields • Electromagnetic Induction • Quantum and nuclear physics • Engineering Physics 	<ul style="list-style-type: none"> • Appreciate scientific study and creativity within a global context through stimulating and challenging opportunities • Acquire a body of knowledge, methods and techniques that characterize science and technology • Apply and use a body of knowledge, methods and techniques that characterize science and technology • Develop an ability to analyse, evaluate and synthesize scientific information • Develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities • Develop experimental and investigative scientific skills including the use of current technologies • Develop and apply 21st century communication skills in the study of science • Become critically aware, as global citizens, of the ethical implications of using science and technology • Develop an appreciation of the possibilities and limitations of science and technology • Develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge • ICT literacy and research skills are developed through PSOW, IA, extended essay and independent study

Contributions:

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