

Science

Students throughout Key Stage 3 and 4 follow the [national curriculum for science](#). At Key Stage 4 students follow either the Combined Science (9-1) double GCSE course, or study for separate GCSEs in Biology, Chemistry and Physics. At Key Stage 5 we offer AS and A level courses in Biology, Chemistry Physics and Psychology.

The Key Stage 3 Curriculum

Year	Biology	Chemistry	Physics
7	Cells, Tissues and Organs; Reproduction; Food and digestion	Acids and alkalis; Chemical reactions; Particles 1	Energy; Electrical circuits; Space and gravity
8	Microbes and disease; Ecology and environment; Respiration	Particles 2; Atoms and elements; Patterns in reactivity	Forces; Heat transfer; Light & sound; Magnetism

The Key Stage 4 Curriculum

Combined Science (9-1)

Biology 1 - Cells and control; Genetics; Natural selection and genetic modification; Ecosystems and material cycles.

Biology 2 - Plant structure and their functions; Animal coordination, control and homeostasis; Exchange and transport in animals; Health disease and the development of medicines.

Chemistry 1- Atomic structure and the Periodic table, ionic bonding, covalent bonding, types of substance, calculations involving masses; States of matter; methods of separating and purifying substances; acids; obtaining and using metals; electrolytic processes; reversible reactions and equilibria.

Chemistry 2 - Rates of reaction; Fuels; Heat energy changes in chemical reactions; the earth and atmosphere.

Physics 1- Motion, forces and conservation of energy; Waves;

Light and the electromagnetic spectrum; Particle model; Radioactivity; Astronomy.

Physics 2 - Energy – Forces doing work; Forces and their effects; Electricity and circuits; Magnetism and the motor effect; Particle model 2; Forces and matter.

Separate GCSE Science

Biology - Overarching concepts in biology; Cells and control; Genetics; Natural selection and genetic modification; Ecosystems and material cycles. Plant structure and their functions; Animal coordination, control and homeostasis; Exchange and transport in animals; Health disease and the development of medicines

Chemistry - Atomic structure and the Periodic table, ionic bonding, covalent bonding, types of substance, calculations involving masses; States of matter; methods of separating and purifying substances; acids; obtaining and using metals; electrolytic processes; reversible reactions and equilibria; Rates of reaction; Fuels; Heat energy changes in chemical reactions; the earth and atmosphere; Transition metals, alloys and corrosion; Quantitative analysis; Dynamic equilibria and calculations involving volumes of gases; Chemical cells and fuel cells; qualitative analysis; hydrocarbons; polymers; Alcohols and carboxylic acids; Bulk and surface properties of matter including nanoparticles.

Physics - Waves; Light and the electromagnetic spectrum; Particle model –1; Radioactivity; Astronomy; Energy - Forces doing work; Forces and their effects; Electricity and circuits; Static electricity; Magnetism and the motor effect; Electromagnetic induction; Particle model – 2; Forces and matter.

The Key Stage 5 Curriculum

Qualification	A Level Biology	Exam Board: Edexcel	
Year	Term 1	Term 2	Term 3
12	Module 1: Development of practical skills in biology		
	Module 2: foundations in biology	Module 3: Exchange and transport	Module 4: Biodiversity, evolution and disease
13	Module 1: Development of practical skills in biology		
	Module 5: Communication, homeostasis and energy	Module 6: Genetics, evolution and ecosystems	

Qualification	A Level Chemistry	Exam Board: Edexcel	
Year	Term 1	Term 2	Term 3
12	Module 1: Development of practical skills in chemistry		
	Module 2: foundations in chemistry	Module 3: Periodic table and energy	Module 4: Core organic chemistry and analysis
13	Module 1: Development of practical skills in chemistry		
	Module 5: Physical chemistry and transition elements	Module 6: Organic chemistry and analysis	

Qualification	A Level Physics	Exam Board: Edexcel	
Year	Term 1	Term 2	Term 3
12	Module 1: Development of practical skills in physics		
	Module 2: foundations of physics	Module 3: Forces and motion	Module 4: Electrons, waves and photons
13	Module 1: Development of practical skills in chemistry		
	Module 5: Newtonian world and astrophysics	Module 6: Particles and medical physics	

Extra-Curricular Activities

Students at Key Stage 3 have the opportunity to participate in:

- Whizz Pop Bang Science Club with Paul Foster 3.30-4.00 Tuesdays for Yrs. 7/8 (fun experiments and challenges to promote a love of science)
- LEGO Club with Louise Oliver and Paul Foster 3.30-4.30 Fridays for Yrs. 7/8/9 (building and programming LEGO MINDSTORMS)

robotic models in preparation for the annual First Lego League regional, national and international competitions)

In Key Stage 4, the following extra-curricular activities are available:

- Revision and intervention; all Science teachers 3.30-4.30 Thursdays for Yr.11

In Key Stage 5:

- A Level Physics revision and intervention with Andy Kirk Fridays 3.40-4.30 for Yrs. 12/13.

- Sixth Form Science Committee with Louise Oliver during form time Fridays for Yrs. 12/13 (planning and delivering science quizzes and other experiments/activities for younger year groups and feeder primary schools to promote a love of science)

For further information regarding science programmes of study please see the information below or contact Head of Science Mr G Stanger.