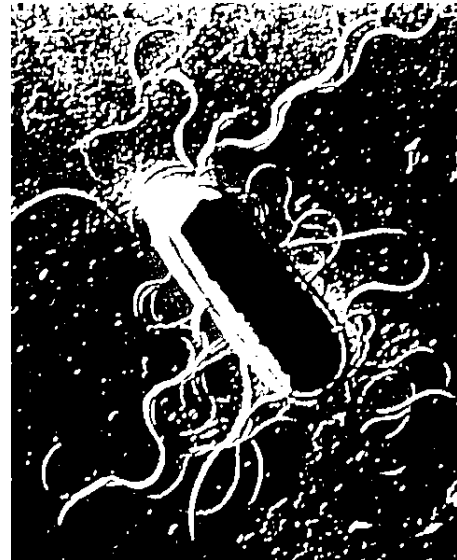
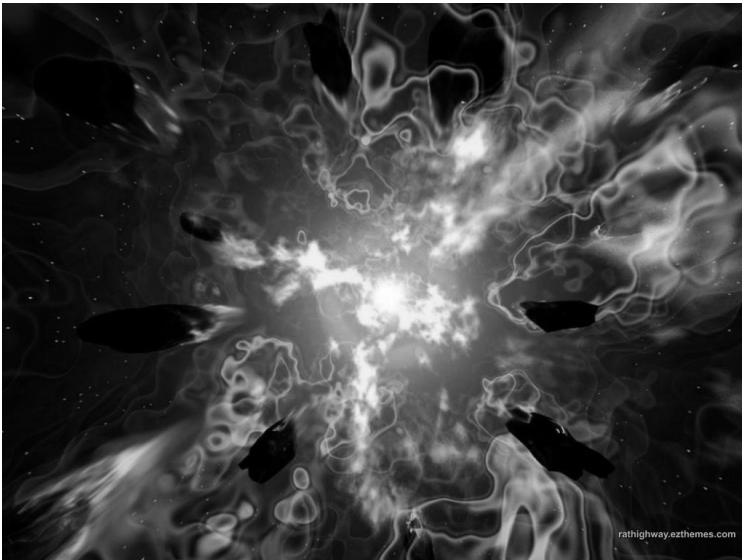


STEM: SCIENCE



'Science is great, I love the practicals'

Principal: Mr R Clutterbuck

Programme Leader [STEM] : Mr J Beebe

Science at King's Oak Academy

King's Oak Academy students enjoy studying science and find it an exciting subject to learn about through practical work, demonstrations and theory. Students are successful and high achieving. Students use practical investigations, theories and models to explain scientific phenomena and everyday experiences.

Students build on their existing scientific knowledge to develop a broad understanding of many areas of traditional and modern science across Biology, Chemistry and Physics. Students will explore a wide range of topics throughout five years of science, ranging from forces to cloning, atoms to black holes and bacteria to nanoparticles.

Students learn how to evaluate evidence and draw conclusions based on data. Students understand the importance of scientific exploration and discoveries and how they may impact on society.

Resources

The science faculty has a wide range of science apparatus and modern equipment which students use in practical work and teachers use to demonstrate new concepts.

There are 8 laboratories, all with data projectors and whiteboards, 6 of which have been recently refurbished. The science department also has its own computer room for use in lessons for research, simulated experiments, coursework write up and revision.

A variety of textbooks and multimedia resources are used to enhance learning.

Key Stage 3

Pupils follow the new national curriculum Key Stage 3 course which lays the foundation to future success in science. The course demands a broad range of knowledge and understanding about a variety of science topics. It also emphasises skills such as analysing and evaluating evidence, as well as promoting gathering evidence by research and practical work.

Students' progress is monitored lesson by lesson through assessment for learning activities and throughout the course by end of topic tests, levelled assessed tasks and homework activities. A final national curriculum teacher level awarded at the end of the year which reflects achievement in lessons as well as attainment in the end of topic tests.

In Year 7, students are taught in mixed ability classes and then set according to ability in Years 8 and 9.

Key Stage 4

There are 2 options of study for science at KS4:

1. GCSE Biology, Chemistry, Physics

Summary of modules:

Assessment overview : A mixture of different question styles, including multiple-choice questions, short answer questions, calculations and extended open response questions.

Biology:

Paper 1: Written examination: 1 hour and 45 minutes 50% of the qualification 100 marks

Content overview: Topic 1: Key concepts in biology; Topic 2: Cells and control; Topic 3: Genetics; Topic 4: Natural selection and genetic modification; Topic 5: Health, disease and the development of medicines.

Paper 2: Written examination: 1 hour 45 minutes 50% of the qualification 100 marks

Content overview: Topic 1: Key concepts in biology; Topic 6: Plant structures and their functions; Topic 7: Animal coordination, control and homeostasis; Topic 8: Exchange and transport in animals; Topic 9: Ecosystems and material cycles.

Chemistry:

Paper 1: Written examination: 1 hour and 45 minutes 50% of the qualification 100 marks

Content overview: Topic 1: Key concepts in chemistry; Topic 2: States of matter and mixtures; Topic 3: Chemical changes; Topic 4: Extracting metals and equilibria; Topic 5: Separate chemistry 1.

Paper 2: Written examination: 1 hour and 45 minutes 50% of the qualification 100 marks

Content overview: Topic 1: Key concepts in chemistry; Topic 6: Groups in the periodic table; Topic 7: Rates of reaction and energy changes; Topic 8: Fuels and Earth science; Topic 9: Separate chemistry 2.

Physics:

Paper 1: Written examination: 1 hour and 45 minutes 50% of the qualification 100 marks

Content overview: Topic 1: Key concepts of physics; Topic 2: Motion and forces; Topic 3: Conservation of energy; Topic 4: Waves; Topic 5: Light and the electromagnetic spectrum; Topic 6: Radioactivity; Topic 7: Astronomy

Paper 2: Written examination: 1 hour 45 minutes 50% of the qualification 100 marks

Content overview: Topic 1: Key concepts of physics ;Topic 8: Energy - Forces doing work; Topic 9: Forces and their effects; Topic 10: Electricity and circuits; Topic 11: Static electricity; Topic 12: Magnetism and the motor effect; Topic 13: Electromagnetic induction; Topic 14: Particle model; Topic 15: Forces and matter;

2. Combined Science

Assessment overview A mixture of different question styles, including multiple-choice questions, short answer questions, calculations and extended open response questions.

Paper 1: Biology 1 Written examination: 1 hour and 10 minutes 16.67% of the qualification 60 marks

Content overview: Topic 1: Key concepts in biology; Topic 2: Cells and control; Topic 3: Genetics; Topic 4: Natural selection and genetic modification; Topic 5 – Health, disease and the development of medicines.

Paper 2: Biology 2 Written examination: 1 hour 10 minutes 16.67% of the qualification 60 marks

Content overview: Topic 1: Key concepts in biology; Topic 6: Plant structures and their functions; Topic 7: Animal coordination, control and homeostasis; Topic 8: Exchange and transport in animals; Topic 9: Ecosystems and material cycles.

Paper 3: Chemistry 1 Written examination: 1 hour and 10 minutes 16.67% of the qualification 60 marks

Content overview: Topic 1: Key concepts in chemistry; Topic 2: States of matter and mixtures; Topic 3: Chemical changes; Topic 4: Extracting metals and equilibria; Topic 5: Separate chemistry 1.

Paper 4: Chemistry 2 Written examination: 1 hour 10 minutes 16.67% of the qualification 60 marks

Content overview: Topic 1: Key concepts in chemistry; Topic 6: Groups in the periodic table; Topic 7: Rates of reaction and energy changes; Topic 8: Fuels and Earth science; Topic 9: Separate chemistry 2.

Paper 5: Physics 1 Written examination: 1 hour and 10 minutes 16.67% of the qualification 60 marks

Content overview: Topic 1: Key concepts of physics; Topic 2: Motion and forces; Topic 3: Conservation of energy; Topic 4: Waves; Topic 5: Light and the electromagnetic spectrum; Topic 6: Radioactivity; Topic 7: Astronomy.