**Science**

Curriculum Statement



**Curriculum Diet**

Years 7 and 8 have 3 lessons per week of Science. The topics are based around Biology, Chemistry and Physics. These include:

**Year 7**

* Cells
* Structure and function of body
* Particles and their behaviour
* Elements, atoms and compounds
* Forces
* Sound

**Year 8**

* Health and lifestyle
* Adaptations and inheritance
* The periodic table
* Separation techniques
* Electricity and magnetism
* Energy

Years 9, 10 and 11 each have 4 lessons of Science per week and follow the Gateway OCR Biology 9-1 program of study.

Topics include:

* Cell level systems
* Scaling up
* Organism level systems
* Community level systems
* Genes, inheritance and selection
* Global changes

A topic of physics will be introduced for year 9, this will be taught over a four week period to enhance the curriculum and develop their knowledge and learning and love of the Sciences.

The topic to be covered directly in Science will be ‘Turning Points in Physics’. A second element of physics “New Technology” is cross curricular taught in ICT and PE.

Chemistry is taught as an additional GCSE Science option if appropriate and accessible to pupils. Each pupil is assessed based on predicted outcomes, their knowledge and understanding of Biology and Physics and additional need and support.

Topics include:

* Particles
* Elements, compounds and mixtures
* Chemical reactions
* Predicting and identifying reactions and products
* Monitoring and controlling chemical reactions
* Global challenges
* Practical skills

**Intent**

We are surrounded by technology and the products of Science each day. As children grow up in an increasingly technologically and scientifically advanced world, they need to be scientifically literate to succeed. Whether “natural” or human derived, every aspect of a student’s life is filled with Science. Government guide lines focuses us on STEM (science, technology, engineering and maths) Cross curriculum links are important throughout the school.

Science is the systematic study of the structure and behavior of the physical, social, and natural worlds through observation and experimentation. It’s key to innovation, global competitiveness, and human advancement. It’s important that the world continues to advance the field of science.

The teaching of Science is important for:

* Enabling pupils to explore their world and discover new things.
* Engaging pupils to enjoy their learning. Using exciting chemicals, materials and experiences that motivate them to succeed and pursue the sciences throughout their school life.
* Developing critical thinking through:
	+ Taking natural human curiosity and necessity which leads to answering questions (what is the problem?)
	+ Constructing a hypothesis (how do I solve it?)
	+ Testing it with evidence and evaluating the result (did the solution work?)
	+ Making future decisions based on the result.
* Developing transferrable skills that are needed in all areas of the curriculum and life.
* Science also involves a lot of communication with other people and develops patience and perseverance in children.
* More than ever before, educators need to employ teaching strategies that inspire and prepare children to embrace science and potentially pursue it in their college and career choices, as there is an increasing need for scientists, engineers, and innovators.

**Implementation**

* We strive to ensure all pupils study the full science curriculum in Key Stage 3, with units from Chemistry, Biology and Physics being delivered through a mixture of theory and practical sessions. This is not without challenges, as pupils have missed large portions of the primary curriculum due to a disrupted education.
* Pupils are encouraged to develop their skills of working scientifically through practical experiments, while key knowledge is delivered through theory sessions, which can be both teacher led or pupil led learning.
* Where possible we stream classes to ensure pupils are in a class with pupils of a similar ability, allowing greater differentiation across a year group.
* A variety of teaching styles and techniques are used to ensure individualised learning and inspire all pupils to achieve their targets – including IEP targets, those set in PEP meetings and their predicted GCSE grades.
* Trips and visit are selected to support the curriculum and to bring subjects to life, engaging pupils outside of the typical classroom setting.
* The introduction of interactive digital systems to support teaching stimulates the delivery of lessons offering pupils the opportunity to witness science in action through videos, where practical experiments are unavailable.
* A new interactive package and schemes of work have been purchased at Key Stage 3 which provides a smoother transition to Key Stage 4 and supports pupils in developing their skills before they undertake their GCSE studies.
* Pupils develop their understanding of individual topics through the construction of scientific models which are displayed around the classroom to provide an interesting and engaging learning environment.
* In Key Stage 4, follow the OCR Biology GCSE syllabus, which has been selected with careful consideration of the demands of each course and their methods of assessment, and the needs of our pupils.
* Pupils showing a high aptitude for Science have been selected to complete GCSE Chemistry as an additional qualification, affording them the opportunity to gain two GCSEs in Science.

**Impact**

The impact of Science teaching is evident in the pupils’ enjoyment of the subject as well as in their academic success. While it is encouraging that pupils leave with good qualifications, the greatest impact we have as a department is encouraging pupils to engage in “joined up thinking” – seeing links between what they have learnt in science and the other areas of the whole school curriculum. Pupils leave Rosewood with enquiring minds and a deeper knowledge of the world around them – within the context of the GCSE syllabus, this translates into excellent results for science.

Pupils develop an understanding of their own lives within the context of science – skills such as keeping themselves healthy and safe are engrained within the curriculum - this works to ensure our pupils are prepared for life after they leave school.

Pupils leave Rosewood with a deeper knowledge of the environment and how it is vital that we make changes to our lives to protect and preserve our world for future generations. Pupils’ behaviour and engagement in Science lessons has improved since the introduction of digital interactive systems to delivery of the curriculum. Pupils can apply their knowledge and understanding to relevant career choices and college courses – whether directly or indirectly science based.

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| Year 7 |  |  |  |  |  |  |  |  |  |  |  |  |
| Autumn |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Cells | Structure and function of the body systems  Cross curricular links to PE and FT | Reproduction  SMSC and cross curricular links to PSHE | Particles and behaviour | Consolidation and Assessment |
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| Spring |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Elements, atoms and compounds | Reactions | Acids and alkalis | ForcesCross curricular links to PE | Consolidation and Assessment |
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| Summer |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Sound Cross curricular links to ICT | Space | LightCross curricular links to ICT | Consolidation and Assessment |

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| Year 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| Autumn |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Health and lifestyleSMSC and cross curricular PSHE, FT and PE | Ecosystem | AdaptationsCross curricular links to PSHE | Consolidation and Assessment |
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| Spring |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Periodic Table | Separation techniques | Metals and acids | EarthLinks to SMSC (Re-cycling) Cross curricular link to Geography | Consolidation and Assessment |
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| Summer |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Electricity and magnetism | EnergyCross curricular links to ICT | SoundCross curricular links to ICT | Consolidation and Assessment |

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| Year 9 |  |  |  |  |  |  |  |  |  |  |  |  |
| Autumn |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Cell structures | What happens in cells? SMSC (DNA) and PSHE | Consolidation and Assessment |
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| Spring |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| RespirationCross curricular links to PE, FT | Photosynthesis | Consolidation and Assessment |
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| Summer |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Supplying the cellSMSC (Stem cells) | The challenge of sizeCross curricular links to Maths and PE | Consolidation and Assessment |

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| **Year 9 - Four Weeks – Physics Program of Study** |
| Week 1 | Week 2 | Week 3 | Week 4 |
| Discovering the Universe 1Discovering the Universe 2The Big Bang | Space Crafts and SatellitesMission to the MoonRadioactivity 1 | Radioactivity 2Electromagnetism 1Electromagnetism 2 | Practical lessons to solidify learning. |

Year 10

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| Autumn |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Nervous systemCross curricular links to PE The endocrine systemSMSC – (Menstrual Cycle) Cross curricular links to PE and PSHE | Maintaining internal environment EcosystemsCross curricular links to Geography and MathsCross curricular links to PE and PSHE | Consolidation and Assessment |
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| Spring |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| InheritanceCross curricular links to Maths and ICT Natural selection and evolution | (Current year 10 only) Chemistry – Particles  | Consolidation and Assessment |
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| Summer |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Elements, Compounds and mixtures |  Chemical reactions | Consolidation and Assessment |

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| Year 11 |  |  |  |  |  |  |  |  |  |  |  |  |
| Autumn |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Monitoring and maintaining environmentsSMSC – (Hunting and Fishing, Biodiversity)Cross curricular links to Maths and Geography | Feeding the human raceSMSC (Genetic engineering)Cross curricular links to FT, Maths and ICT. | Consolidation and Assessment |
| Predicting and identifying reactions and products | Monitoring and controlling chemical reactions |  |
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| Spring |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Remainder of term |
| Monitoring and maintaining healthSMSC – (Vaccines)Cross curricular links to PSHE, RSE and Maths  | Non communicable diseaseSMSC – (Stem cells and Organ Donation)Cross curricular links to PSHE and PE | Consolidation and Assessment |
| Global Challenges | Practical Skills |  |
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| Summer |  |  |  |  |  |  |  |  |  |  |  |  |
| Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 |
| Exam paper and revision |

**Medium Term Planning**

Medium term planning/schemes of work can be found at:

https://www.kerboodle.com/app