

Year 8 Science Curriculum Overview

The aims of our curriculum:

1. Enable children to retain and apply this essential knowledge.
2. Inspire children to become life-long learners.
3. Create a culture of high aspiration through challenging content and, therefore, pride in achievement.
4. Promote the spiritual, moral, social, and cultural development of children, including the fundamental British values of democracy, the rule of law, individual liberty, mutual respect, and tolerance for those with different faiths and beliefs and for those without faith.
5. Provide opportunities for developing self-confidence, self-awareness, independence, creativity, respect and resilience in children.
6. Promote knowledge and understanding of how children can keep themselves safe and healthy.
7. Develop children's numeracy, literacy and oracy, including the sustained expansion of their vocabulary.
8. Promote reading as a life skill and enable our children to become life-long readers.

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| Year 8 | Areas | Term 1 | Term 2 | Term 3 |
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| | Content | <p><u>Physics – Forces</u></p> <ul style="list-style-type: none"> • Represent forces as pushes or pulls using arrows to explain resultant forces • Calculate moments as the turning effect of a force • Stretching and squashing of springs including Hooke’s Law • Calculate the work done to deform on object <p><u>Biology – Health, nutrition and digestion</u></p> <ul style="list-style-type: none"> • Describe the content of a healthy balanced diet • Calculate energy requirements of various people • Explain the consequences of imbalances in the diet including obesity, starvation and deficiency diseases • Explain the structure and function of the human digestive system including the action of enzymes <p><u>Physics – Magnetism and electromagnetism</u></p> <ul style="list-style-type: none"> • Represent magnetic fields using line drawings • Explain the rules of magnetic attraction and repulsion | <p><u>Physics – Radiation and energy</u></p> <ul style="list-style-type: none"> • Describe changes with temperature in motion and spacing of particles • Explain how different frequencies of the electromagnetic spectrum transfer varying energy <p><u>Physics – Work and energy transfers</u></p> <ul style="list-style-type: none"> • Comparing and contrasting conduction, convection and radiation • Explaining the difference between heat and temperature • Using knowledge of energy transfers to justify the use of different methods of insulation <p><u>Biology – Respiration and photosynthesis</u></p> <ul style="list-style-type: none"> • Describe aerobic and anaerobic respiration in living organisms • Represent aerobic respiration as both word and balanced symbol equations • Compare the process of anaerobic respiration in animals and micro-organisms • Know the word equation for anaerobic fermentation • Understand the dependence on almost all life on Earth to the process of photosynthesis | <p><u>Biology – Bioenergetics</u></p> <ul style="list-style-type: none"> • Compare and contrast photosynthesis and respiration • Compare and contrast the processes of aerobic and anaerobic respiration • Explain the importance of anaerobic fermentation of yeast in the production of food and drinks <p><u>Biology – Gas exchange systems</u></p> <ul style="list-style-type: none"> • Describe the structure and function of the human gas exchange system • Explain the mechanism of breathing using a pressure model to explain the movement of gases • Evaluate the impact of exercise, asthma and smoking on the human gas exchange system <p><u>Biology – Genetics and evolution</u></p> <ul style="list-style-type: none"> • Describe a simple model of chromosomes • Explain the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model • Understand that variation within an species can be continuous or discontinuous |

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| | | <ul style="list-style-type: none"> The magnetic effect of a current, including electromagnets | <ul style="list-style-type: none"> Explain the adaptations of leaves for photosynthesis Represent photosynthesis as both word and balanced symbol equations | <ul style="list-style-type: none"> Explain the Darwinian model of natural selection through variation, reproductive success and passing on of hereditary material |
| | Literacy Link | <ul style="list-style-type: none"> Key vocabulary Command words (e.g. describe and explain) Electromagnets assessed practical write up | <ul style="list-style-type: none"> Key vocabulary Photosynthesis assessed practical write up | <ul style="list-style-type: none"> Key vocabulary Command words (eg. Predict, explain, describe, evaluate) |
| | Assessment | <ul style="list-style-type: none"> Forces Digestion assessment Electromagnets required practical | <ul style="list-style-type: none"> Radiation and energy assessment Photosynthesis assessed practical Respiration and photosynthesis assessment | <ul style="list-style-type: none"> Bioenergetics assessment Genetics assessment |
| | Cross Curricular Links | <ul style="list-style-type: none"> DT (constructing electrical circuits) Maths (rearranging equations) Food tech (components of a balanced diet) | <ul style="list-style-type: none"> Maths (taking measurements and using appropriate units) Art (constructing models of leaf adaptations) PE (respiration including oxygen debt) | <ul style="list-style-type: none"> Maths (recording data and constructing graphs) RE comparing the theory of evolution to creationism |