

Subject:

BIOLOGY

Biology Intent:

We study Science because Science is about understanding. Understanding of how everything works, our place, impact, role and responsibilities in the Universe. To explore how scientific ideas develop and how we learn through experimentation. We provide stimulating, engaging and intellectually challenging learning environments to enable all our students to develop their scientific investigative and analytical skills. We are committed to promoting equal opportunity and take up of STEM careers. We want ALL of our students to be able to ask good questions, and thereby make informed decisions. May the force be with you!

Our Exam Board is: AQA

The Big Questions...

Year 10 (Bold italics Treble Only)	Year 11 (Bold italics Treble Only)
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Cell biology – How can we observe cells? How are plant, animal and bacterial cells similar or different to each other? What are Eukaryotic and Prokaryotic cells? How and why do cells become specialised? How are different substances transported into and out of cells? What is the cell cycle? How do cells divide? What are stem cells? How can we use stem cells in research and medicine? Can I discuss the issues surrounding their use?

Organisation – How are organisms organised? How does the digestive system work? What are enzymes and what factors can affect their action? How do enzymes help digestion? What is in blood? How does the structure of the heart allow it to function? How does the structure of the blood vessels help them to function? How can we treat problems with the heart and circulatory system? How does the structure of the lungs allow us to breathe? How are the alveoli adapted to allow efficient gas exchange? How do plants transport water and sugars around their tissues? What is transpiration and what are the factors which affect it?

Infection & response – What is health? What are some examples of communicable diseases? How are they spread? How can we grow bacteria in the lab? **How can we prevent bacterial growth?** How can we prevent the spread of pathogens? How does the human body defend itself against disease? **How do plants defend themselves against disease?** How do vaccines work? What are antibiotics? How are new drugs developed? **What are monoclonal antibodies and how are they used?** What are non-communicable diseases? What is cancer? What lifestyle factors affect your health?

Bioenergetics – Why do we need two types of respiration? How do our bodies respond to exercise? What is metabolism? How do plants make their own food? What factors limit the rate of photosynthesis? How do plants use the glucose they make?

Homeostasis & response – What is homeostasis? How is our nervous system designed to allow us to respond to stimuli? What are reflex actions? **How is the structure of the brain linked to function? How do we see? How do glasses work?** What are hormones? How is blood glucose regulated and how can we treat diabetes? How is the female menstrual cycle regulated and how are hormones used in contraception and fertility treatments? **How do plants use hormones? What is thermoregulation? How are the kidneys involved in osmoregulation and production of urine? How can we treat problems with the kidney?**

Inheritance, variation & evolution – How do organisms reproduce? **Why do some organisms use both forms of reproduction?** How has studying the human genome helped us? **How does the structure of DNA help it to synthesise proteins? What can mutations do?** How does inheritance work? Is it right to screen for genetic disorders? How does variation lead to evolution through natural selection? How can we use artificial selection and genetic engineering? **What is cloning and how can we use it? How have theories of evolution changed through history?** What is the evidence for evolution? What are the causes of extinctions? How is life classified?

Ecology – How are organisms adapted? What factors can affect organisms? How are substances cycled around the ecosystem? **How can we change the rate of decay?** How has the human population affected the land, air and sea? How will global warming affect our planet? How are humans affecting biodiversity globally? **What are trophic levels and how does biomass change along a food chain? How can we make our food production secure, efficient and sustainable?**

What skills will I develop?

Studying biology opens our eyes to the wonders of nature. How has life come to be? What is our role on this planet? How can we adapt our lifestyles to support biodiversity on our planet? Biology teaches us how our bodies work and how to look after them for a healthy future. In practical lessons you will gain valuable lab skills and the ability to analyse and evaluate data. You will also find opportunities to share and discuss opinions about the latest biological discoveries and technologies based on evidence. This helps form the basis to making educated life decisions. Biologists go on to flourish in a wide variety of careers such as medicine, scientific and medical research, education, natural history film making, animal care and conservation,

What great resources can I use?

- The “Science Read Only Drive” (<https://yateleyschool.sharepoint.com/sites/Science-ReadOnly>) has the best resources we can find including past papers & question packs.
- www.senecalearning.com covers all the core information. Make sure you choose AQA!
- https://www.youtube.com/channel/UCqbOeHaAUxw9II7sBVG3_bw has excellent short videos covering the whole of the course.
- <https://myonlinesciencetutor.com/> has multiple choice questions linked to videos
If you can't find what you need ask Mrs McCarthy !!!

How will I be assessed?

At Key stage 4 work is assessed through a series of GCSE graded exams on the units shown above so that students can understand their strengths and weaknesses on each unit. Students sit Paper 1 GCSE exams at the end of Year 10 to give an accurate measure of attainment. Teacher written feedback is given on a series of ‘Teacher Assessed Tasks’.

Examination: The end of the GCSE course is 100% exam-based. Double students will sit two 1hr15min papers that count towards their double award. Trebles will sit two 1hr45min papers for their Biology GCSE.

Three ways that parents/carers can help...

- 1) Encourage students to watch natural history documentaries e.g. Planet Earth and also programs like Horizon.
- 2) Visit the Natural History Museum In London and Marwell Zoo.
- 3) Test students regularly at home with key questions about their topics using revision guides and other resources. Encourage the printing and completion of past paper questions.
- 4) Discuss scientific discoveries in the news.

