



Roundwood Park School

KS4 Biology

Our curriculum follows the AQA Separate science and AQA Combined Science routes. We are confident that this is a good specification for RPS as it embraces the practical skills necessary to help our scientists develop and prepare them for the next stage of their education and helps the students develop their Science Capital. As an experienced and active department, we strive to instil a love of biology in our students. The real- world application of new breakthroughs in science such as the use of Stem Cells, Drug testing and Genetic Engineering gives the students valuable insights to the potential careers and cultural applications of the scientific ideas discussed in lessons. These help our students grow their Science Capital, especially in terms of how they can pursue their scientific journey beyond RPS. By offering the option to follow the Separate Science or the Combined Science route, alongside the options of HT or FT we can tailor the approach on the individual level and suit each learner's needs.

Building on the skills and concepts introduced at KS3 including the Year 9 transition year, the KS4 science curriculum refines the understanding of experimental design and consolidates the application of mathematical skills. We also have embedded the ASPIRE skills throughout the KS4 curriculum, making sure that every opportunity is taken to link the ideas covered on the specification to opportunities to develop both ASPIRE and WS skills. The learning habits included in the "Learning to Understand" quadrant of the ASPIRE board in particular strike a chord with the core values in Science. Our students are given multiple opportunities to solve problems, and the experimental process we follow consolidates their logical thinking and resourcefulness in many different contexts.

Our well-resourced laboratories allow students to apply their theoretical understanding to practical scenarios. The use of demos and experiments allows students to appreciate the importance of control variables and validity of their conclusions. This is supported by our Required Practical booklets that give students clear guidance on the methods, gives the students support materials for the skills and gives them an opportunity to understand how these skills are to be assessed in their final examinations.

In Biology, the curriculum is mostly taught in the order of the AQA specification, which follows a logical and natural progression. From the initial building blocks of life Cells, into Tissues and then how the different organ systems work together. This helps to prepare students for the more challenging areas such as genetics and biodiversity, which build on the earlier fundamentals. By teaching in such a logical structure, we can ensure that the specification is comprehensively covered and that pupils are clear about what topics are to be assessed in which exam paper.

Year / term	Unit of work	Assessment
Year 10 Autumn term	B2 - Organisation B2.1, Organisation and the digestive system B2.2.1 Food tests RP4 B2.2.1 Enzymes RP5 B2.2.2 Heart and blood vessels B2.2.3 Blood B2.2.4 Coronary heart disease B2.2.5/6 Health issues and effect of lifestyle	B1,3 & 4 Bridging Assessment Required practical 4 – Food tests Required practical 5 – Enzymes B2 Assessment Oct B2 Assessment Dec
Super Curricular	Go meat free for a week! Find out how this reduces your Carbon footprint. Grow your own vegetables and make a meal from your produce. Read New Scientist article	

Year / term	Unit of work	Assessment
Year 10 Spring term	B2 - Organisation B2.3.1 Plant tissues B2.3.2 Plant organs B3: Disease B3.3.2 Plant defences B3.2.1/2 Monoclonal antibodies and their uses B1: Cell Biology B1.1.5/6 Microscopy and culturing microorganisms B1.1.6 Culturing microorganism and RP2	Required Practical 2 – Antibiotics Assessment B2&3 Assessment B1-4
Super Curricular	Find out what the dangers are from antibiotic resistance. What can be done to reduce the risk? Were humans happier as hunter gatherers? Find out the issues with our modern sedentary life style.	

Year / term	Unit of work	Assessment
Year 10 Summer term	B5 – Homeostasis and response B5.2.1 – Human nervous system recap (reflex arc, reaction time and brain) B5.2.3 – Eye structure and function B5.2.3 – Eye focusing and defects B5.2.4 – thermoregulation B5.3.1 – human endocrine system B5.3.2 – Control of blood glucose concentration B5.3.2 – Type 1 and 2 diabetes B5.3.3- Maintaining water balance B5.3.3 - kidney function and ADH [kidney transplants HL] B5.3.4 – Hormones in human reproduction B5.3.4 – Contraception B5.3.6 – The use of hormones to treat infertility B5.4 – Plant hormones intro – set up Required Practical 8 B5.4 - Plant hormones and their uses B5.4 - Data collection review and revision	B5 Assessment 1 (B1-4 included) B5 Assessment 2 (B1-4 included) Required Practical 8 - Phototropism End of year – Year 10 mocks B1-4 examination
Super Curricular	Find out what countries the food you eat comes from. How many “food miles” your average meal has. Find out what the dangers are from antibiotic resistance. What can be done to reduce the risk? What is the potential for stem cells to be used in medical treatments?	

Year / term	Unit of work	Assessment
<p>Year 11 Autumn Term</p>	<p>B5 – Homeostasis and response B5.2.1 – Human nervous system recap (reflex arc, reaction time and brain) B5.2.3 – Eye structure and function B5.2.3 – Eye focusing and defects B5.2.4 – thermoregulation B5.3.1 – human endocrine system B5.3.2 – Control of blood glucose concentration B5.3.2 – Type 1 and 2 diabetes B5.3.3- Maintaining water balance B5.3.3 - kidney function and ADH [kidney transplants HL] B5.3.4 – Hormones in human reproduction B5.3.4 – Contraception B5.3.6 – The use of hormones to treat infertility B5.4 – Plant hormones intro – set up Required Practical 8 B5.4 - Plant hormones and their uses B5.4 - Data collection review and revision</p> <p>B6 – Inheritance, Variation and Evolution B6.1 – Reproduction, sexual and asexual – examples (plasmodium, fungi, plants) B6.1.2 – Meiosis, advantages and disadvantages of sexual and asexual reproduction B6.1.4 – DNA and the genome (structure) B6.1.5 – genetic code and amino acid sequence B6.1.5 - Protein synthesis and mutations</p>	<p>B5 Assessment 1 (B1-4 included) B5 Assessment 2 (B1-4 included) Required Practical 8 - Phototropism</p> <p>Mock exam Paper B1-4</p>
<p>Super Curricular</p>	<p>Visit the Wellcome Collection “Being Human” exhibition Do work experience at GSK or similar scientific research facility Contact Rothamsted Research to find out what you can do to learn about their work</p>	

Year / term	Unit of work	Assessment
<p>Year 11 Spring Term</p>	<p>B6.1.6 Genetic inheritance (and sex determination (B6.1.8)) B6.1.6 Genetic inheritance (and sex determination (B6.1.8)) B6.1.7 Inherited disorders B6.2 Variation and evolution B6.2.3 Selective breeding and genetic engineering B6.2 Risks and benefits of genetic engineering B6.2.5 Cloning B6.3 Evolution and evidence for evolution (B6.3.4, B6.3.5) B6.3.6 Extinction and resistant bacteria Half term Project (Biodiversity, Waste management & Land use/deforestation/Global warming) B6.4 Classification</p> <p>B7 - Ecology</p> <p>B7.1.1 Communities B7.1.2/3 Biotic and abiotic factors and the effect on communities [impact of environmental change H/L B7.2.4] B7.1.4 Adaptations and levels of organisation B7 Required practical 9 B7.2.2 Carbon cycle and water cycle B7.2.3 Decomposition Required Practical 10 B7 – Review results and method from RP10 B7.3.6 – Maintaining biodiversity B7.4 Trophic levels in an ecosystem B7.5 Food production</p>	<p>Assessment B6 so far Half term project assessment Project review & mini assessment Required Practical 9 – Field work Required Practical 10 – Decomposition Paper 2 mock examination B5-7</p>
<p>Super Curricular</p>	<p>Find out why it is difficult to develop a vaccine for Malaria Were humans happier as hunter gatherers? Find out the issues with our modern sedentary life style.</p>	