



**Overview:**

Students have 4 biology lessons a fortnight during which we develop increasingly complex and demanding biological concepts, processes and skills. A range of topics are taught, which build on the learning from Year 9. Independent learning is set every week which follows learning in lessons so students have the chance to revisit and embed knowledge. We have three big assessments in the year and leading up to these assessments we have revision lessons where we teach and develop good revision techniques.

**Careers in the Curriculum:**

The topics covered will highlight links to careers in virology, exercise science, farm management, optometry, health advisor, ecology.

Term	Topic	Assessment
Aut1	B3 - Infection and response <ul style="list-style-type: none"> <li>• Pathogens</li> <li>• Aseptic technique</li> <li>• Culturing microorganisms</li> </ul>	Aiming High 1 test in mid-October assessing all of the topics taught up to that point.
Aut2	B3 - Infection and response <ul style="list-style-type: none"> <li>• Plant diseases and defences</li> <li>• Vaccination</li> <li>• Development of new medicines</li> <li>• Monoclonal antibodies</li> </ul> B4 - Bioenergetics <ul style="list-style-type: none"> <li>• Photosynthesis</li> </ul>	Formative assessment in class through the use of show me boards and questioning.
Spr1	B4 - Bioenergetics <ul style="list-style-type: none"> <li>• How plants use glucose</li> <li>• Aerobic and anaerobic respiration</li> <li>• Exercise</li> </ul>	Aiming High 2 test in late January assessing all of the topics taught up to that point.
Spr2	B5 - Homeostasis and response <ul style="list-style-type: none"> <li>• The nervous system</li> <li>• The brain</li> <li>• The eye</li> <li>• The endocrine system</li> <li>• Diabetes</li> </ul>	Formative assessment in class through the use of show me boards and questioning.
Sum1	B5 - Homeostasis and response <ul style="list-style-type: none"> <li>• Human reproductive hormones</li> <li>• Contraception and infertility treatment</li> <li>• Plant growth, to include plant hormones</li> <li>• Controlling body temperature</li> <li>• The kidney</li> </ul>	Formative assessment in class through the use of show me boards and questioning.
Sum2	B7 - Ecology <ul style="list-style-type: none"> <li>• Environmental sampling</li> <li>• Competition in animals and in plants</li> <li>• Adaptations for survival</li> </ul>	PPE in mid-June assessing all of the topics taught up to that point.



**Overview:**

Students are taught the final topics from GCSE biology. Lessons focus on developing application, analytical and data processing skills by using past paper questions as part of lessons. Required practicals are carried out alongside regular practicals so we continue to develop practical skills. Independent learning continues to be set each week which supports retention of knowledge and skills developed in lessons. We have two major assessments in the year, and of course the big focus is the final exam in the summer. Revision lessons precede these assessments where we refine revision skills and hone knowledge and techniques.

**Careers in the Curriculum:**

The topics covered will highlight links to careers in genetics, animal reproductive science, lab technician, environmental monitoring.

Term	Topic	Assessment
Aut1	B6 - Inheritance, variation and evolution <ul style="list-style-type: none"> <li>• Type of reproduction (sexual and asexual)</li> <li>• Meiosis and mitosis</li> <li>• Protein synthesis</li> <li>• Genetic inheritance</li> <li>• Variation and natural selection</li> <li>• Classification</li> </ul>	Formative assessment in class through the use of show me boards and questioning.
Aut2	B6 - inheritance, variation and evolution <ul style="list-style-type: none"> <li>• Genetic engineering</li> <li>• Cloning</li> <li>• Adult stem cells</li> </ul> B7 - Ecology <ul style="list-style-type: none"> <li>• Material cycling (carbon and nitrogen)</li> <li>• Decay</li> </ul>	Aiming High 1 test in early November assessing all of the topics taught up to that point.
Spr1	B7 - Ecology <ul style="list-style-type: none"> <li>• The importance of biodiversity</li> <li>• Pollution</li> <li>• Global warming</li> </ul>	Formative assessment in class through the use of show me boards and questioning.
Spr2	B7 - Ecology <ul style="list-style-type: none"> <li>• Trophic levels and biomass</li> <li>• Food security</li> <li>• Sustainable food production</li> </ul>	PPE in mid-February assessing all of the topics taught up to that point.
Sum1	Revision <ul style="list-style-type: none"> <li>• Past paper revision questions to practice techniques including evaluate, compare and data interpretation questions.</li> <li>• Review of all topics</li> </ul>	Formative assessment in class through the use of show me boards and questioning.
Sum2	Revision and exam preparation	Final exams



**Overview:**

Year 12 Biology builds on the knowledge and skills developed at GCSE. Topics will feel familiar but the depth of knowledge will be greater so a more intensive lesson preparation and review is initiated. Students are given pre-reading tasks for lessons and are expected to produce a full set of notes. Independent learning tasks are set weekly to embed learning. Practical work is carried out throughout the whole year with skills developed and stretched. Practical competency is monitored by the completion of series of set tasks which are written up in a lab book.

**Careers in the Curriculum:**

The topics covered will highlight links to careers in cell biology, endocrinology, medicine, exercise science, plant biology, zoology, ecology.

Term	Topic	Assessment
<b>Aut1</b>	Unit 1 - Biological molecules <ul style="list-style-type: none"> <li>• Carbohydrates, lipids and proteins</li> <li>• Enzymes</li> </ul> Unit 2 - Cells <ul style="list-style-type: none"> <li>• Cell structure and microscopy</li> <li>• Mitosis and the cell cycle</li> </ul>	End of topic tests every 8 to 10 lessons. Practical skills assessed in lessons. A progress test in mid October which reviews learning from all topics covered up to that point.
<b>Aut2</b>	Unit 1 - Biological molecules <ul style="list-style-type: none"> <li>• Nucleic acids</li> </ul> Unit 2 - Cells <ul style="list-style-type: none"> <li>• Transport across membranes</li> <li>• Immunity</li> </ul> Unit 4 - Genetic information, variation and relationships between organisms <ul style="list-style-type: none"> <li>• DNA, RNA and protein synthesis</li> </ul>	End of topic tests every 8 to 10 lessons.  Practical skills assessed in lessons.
<b>Spr1</b>	Unit 3 - Organisms exchange substances with their environment <ul style="list-style-type: none"> <li>• Gas exchange</li> <li>• The digestive system</li> </ul> Unit 4 - Genetic information, variation and relationships between organisms <ul style="list-style-type: none"> <li>• Genetic diversity and selection</li> <li>• Classification</li> </ul>	End of topic tests every 8 to 10 lessons.  Practical skills assessed in lessons.
<b>Spr2</b>	Unit 3 - Organisms exchange substances with their environment <ul style="list-style-type: none"> <li>• Haemoglobin, the cardiac cycle and blood vessels</li> <li>• Transport of water in the xylem, transport of organic substances in the phloem</li> </ul> Unit 4- Genetic information, variation and relationships between organisms <ul style="list-style-type: none"> <li>• Species diversity</li> <li>• Measuring variation</li> </ul>	End of topic tests every 8 to 10 lessons. Practical skills assessed in lessons. A progress test at the end of February which reviews learning from all topics covered up to that point.
<b>Sum1</b>	Unit 5 - Energy transfer in and between organisms <ul style="list-style-type: none"> <li>• Energy transfer and productivity</li> <li>• Nutrient cycles and net primary production</li> </ul> Unit 7 - Genetics, populations, evolutions and ecosystems <ul style="list-style-type: none"> <li>• Competition, predation</li> <li>• Estimating population size</li> </ul>	End of topic tests every 8 to 10 lessons.  Practical skills assessed in lessons.
<b>Sum2</b>	Revision  Field trips <ul style="list-style-type: none"> <li>• Investigating succession on moorland and sand dunes.</li> <li>• Investigating zonation on rocky shores</li> <li>• Developing practical investigative skills and applying statistical techniques</li> </ul>	Pre-Public Exams (PPEs) in mid June covering all of the learning from year 1 of A level Biology (units 1 to 4).



**Overview:**

Year 13 biology continues in the same fashion as Year 12 but with more complex topics that require students to use a wider range of multidisciplinary knowledge. We focus on developing application and investigative skills in Year 13 developing ever more critical thinking. Independent learning tasks are set weekly to embed learning. Practical work is carried out throughout the whole year with skills developed and stretched. Practical competency is monitored by the completion of series of set tasks which are written up in a lab book.

**Careers in the Curriculum:**

The topics covered will highlight links to careers in biochemistry, genetics, medicine, physiology, biotechnology.

Term	Topic	Assessment
Aut1	Unit 5 - Energy transfer in and between organisms <ul style="list-style-type: none"> <li>• Photosynthesis</li> <li>• Respiration</li> </ul> Unit 7 - Genetics, populations, evolution and ecosystems. <ul style="list-style-type: none"> <li>• Inheritance</li> <li>• Populations and evolution</li> </ul>	End of topic tests every 8 to 10 lessons. Practical skills assessed in lessons.  A progress test in mid September which reviews year 12 content.
Aut2	Unit 6 - Organisms respond to changes in their environments <ul style="list-style-type: none"> <li>• Response to stimuli</li> <li>• Nervous coordination</li> </ul> Unit 8 - The control of gene expression <ul style="list-style-type: none"> <li>• Stem cells, gene expression and cancer</li> </ul>	End of topic tests every 8 to 10 lessons.  Practical skills assessed in lessons.
Spr1	Revision for PPEs <ul style="list-style-type: none"> <li>• Review of units 5 and 7</li> <li>• Develop exam techniques for paper 2 to include comprehension questions</li> </ul>	Pre-Public Exams (PPEs) in late January covering all of the learning from year 2 of A-level Biology (units 5 to 8, excluding content not yet studied.)
Spr2	Unit 6 - Organisms respond to changes in their environments <ul style="list-style-type: none"> <li>• Muscles, structure and contraction</li> <li>• Homeostatic control including the regulation of blood glucose and osmoregulation</li> </ul> Unit 8 - The control of gene expression <ul style="list-style-type: none"> <li>• Recombinant DNA technology including PCR</li> <li>• Genetic fingerprinting</li> </ul>	End of topic tests every 8 to 10 lessons.  Practical skills assessed in lessons.
Sum1	Revision for final exams <ul style="list-style-type: none"> <li>• Paper 3 practice leading to a PPE for Paper 3</li> <li>• Review topics from whole of A-level Biology</li> </ul>	A progress test at the end of April which is in the style of paper 3.
Sum2	Revision and exam preparation	Final exams.