Biology Key Stage 3 Curriculum Plan Year 9

Department Information:

Physics, Biology and Chemistry are popular and successful subjects at Furze Platt. The Department aims to provide a supportive, stimulating, dynamic and academically challenging experience for all students. Over recent years, the Department has gone from strength to strength, and standards and students' results are high.

In Year 9, students begin the fundamental content that will build towards their GCSE. They will receive 9 hours of Science each fortnight, 3 of which will be Biology lessons, with all students studying content that will form part of the AQA exam board's GCSE Biology specification.

Link to specification: https://www.aqa.org.uk/subjects/science/gcse/biology-8461/specification-at-a-glance

ACHIEVE in the curriculum:

*The curriculum has been designed with the ACHIEVE values at its core. Lessons have been written to encourage **ambition** and have also been written with the intent of being enjoyable and giving opportunities for students to celebrate their own successes. **Collaboration** is a key aspect of the scientific method and students will develop this and their **versatility** through the use of class practical activities, as well as through paired and group classwork. Students will develop **integrity** through their completion of independent home learning and through self-marking and peer-marking their work. Students will develop **endurance** through the completion of consolidatory activities such as past exam papers.*

Curriculum Aims & Intent:

The AQA GCSE Biology course is intended to:

- ***Foster a deeper understanding of biology**: By the end of the course, learners should have a comprehensive grasp of key biological principles and be able to explain how these relate to real-world applications in fields like medicine, agriculture, and environmental science.*
- ***Promote scientific inquiry and investigation**: The course encourages students to develop practical skills, such as using microscopes, conducting experiments, and analysing data. Through these activities, learners gain insight into scientific methods and how biological knowledge is constructed and validated.*
- ***Prepare students for further study**: The course lays the foundation for learners interested in pursuing further studies in biology, including A-levels or vocational qualifications, or careers in biology-related fields such as healthcare, biotechnology, and environmental science.*
- ***Equip students with transferable skills**: Learners are trained to think critically, solve problems, analyse information, and communicate scientific ideas effectively, all of which are key skills for future academic and professional success.*
- ***Increase awareness of biology's impact on society**: The course emphasizes the relevance of biology in daily life, from understanding how our bodies work to appreciating the challenges related to health, food security, and climate change.*

Resources:

- Oxford University Press GCSE Textbook (available on Kerboodle or Amazon) https://www.amazon.co.uk/AQA-GCSE-Biology-Student-Book/dp/0198359373
- Revision guide for Separate Science: https://www.amazon.co.uk/AQA-GCSE-Biology-Revision-Guide/dp/0198359403
- Revision guide for Combined Science: https://www.amazon.co.uk/AQA-Biology-GCSE-Combined-Science/dp/0198359306
- Oxford University Press GCSE Biology workbooks (available for Separate and Combined Science)
- Kerboodle https://kerboodle.com
- BBC Bitesize https://www.bbc.co.uk/bitesize
- GCSEPod

By the end of the AQA GCSE Biology course, students will:

- *Understand the structure and function of biological systems at molecular, cellular, and organism levels.*
- *Appreciate the processes and mechanisms that sustain life, such as respiration, photosynthesis, and homeostasis.*
- *Grasp the principles of genetics and evolution, including how variation leads to adaptation and biodiversity.*
- *Be able to explain how biological knowledge is applied in medicine, agriculture, and environmental management.*
- *Understand the importance of evidence and experimentation in building scientific knowledge.*
- *Recognise how human activity affects ecosystems and the steps we can take to mitigate negative impacts.*

- Focus eLearning (useful for practicals)
- PMT (for past paper questions) https://www.physicsandmathstutor.com/biology-revision/gcse-aqa/

How we keep parents informed:		**How parents can help their child**
Year 9 - Progress reports are published 4 times per year, in October, December, March and July, with a face-to-face parents' evening in January. GCSE Options Evening is also in January.		*Regularly check Class Charts to keep track of homework that has been set and make sure that test dates are noted* *Assist with homework where possible and make sure that students are revising for tests using revision guides, Kerboodle and BBC Bitesize* *Purchase revision guides and workbooks (via Amazon or Parentmail)* *Encourage the completion and marking of past paper questions* *Liaise with teachers and attend Parents' evening*

What we study and when:

Term	**Unit, Topic Or Summary Of Work Covered**	**Knowledge, Understanding & Skills Developed**	**ACHIEVE / Personal Development Focus**	**How The Work Is Assessed**	**Careers Links**
1 + 2	**B1: Cells and organisation**	• Describe the basic structure of an animal cell and a plant cell. What are the main differences between them? • Describe the structure of a prokaryotic cell (bacterium) • How does a light microscope work and what is it used for in cell biology?	**Ambitious:** Calculating magnification with unit conversion. Additional research on specialised cells.	This chapter will be assessed in an end-of topic test. There will be a longer response question (6 marker) on **B1.7 Osmosis.**	• Working in cell biology • Medicine Pharmaceuticals • The cosmetics industry • Microbiology • Teaching/lecturing • Medical research

		• How to calculate magnification • What are some examples of specialised cells in animals and plants? How are specialized cells adapted to perform their functions? • How does diffusion and osmosis happen in cells? • How does active transport work, and why is it so important? • Calculation of surface area:volume ratio for living organisms.	**Collaboration:** Completion of two required practicals. **Versatility:** Application of theoretical concepts.		
2	**B2: Cell division**	• What is mitosis and why is it important? • What are the main stages of the cell cycle? • What are stem cells and where can they be found? • How can stem cells be used in medicine? • What are some ethical considerations associated with the use of stem cells?	**Integrity:** Discussion regarding the ethical use of stem cells. **Ambitious:** Additional research regarding the use of stem cells in medicine. **Versatility:** Application of theoretical concepts.	This chapter will be assessed in an end-of topic test. There will be a longer response question (6 marker) on **B1.1 on the cell cycle.**	• Biotechnologist • Geneticist • Cell Biologist • Medical Scientist • Pharmaceutical Researcher • Oncologist • Stem Cell Researcher • Embryologist • Clinical Laboratory Scientist • Forensic Scientist
3	**B3: Organisation and the digestive system**	• What are the main organs of the human digestive system and their functions? • How are carbohydrates, proteins and lipids digested? • How would you test for carbohydrates, protein, lipids? • How are enzymes involved in digestion? • How does temperature and pH affect enzyme action? • What adaptations does the small intestine have for nutrient absorption? • What is the function of bile?	**Collaboration:** Completion of two required practicals. **Versatility:** Application of theoretical concepts.	This chapter will be assessed in an end-of topic test. There will be a longer response question (6 marker) on **B3.6 on lipid digestion.**	• Dietitian • Nutritionist • Gastroenterologist • Biomedical Scientist • Food Scientist • Pharmacologist • Biochemist • Clinical Scientist (Gastroenterology) • Sports Scientist • Public Health Officer

4 + 5	**B4: Organising animals and plants**	• What are the main components of blood and what are their functions. • Describe how the structure of a blood vessel relates to its function. • Evaluate different treatments related to problems with the heart. • Describe how air is moved in to and out of your lungs • Describe the differences between xylem and phloem • What are stomata and what is their role in the plant • What factors affect the rate of transpiration.	**Ambitious:** Additional research about heart disease and how we can treat problems that arise with the circulatory system and the heart. **Endurance:** Heart dissection. **Versatility:** Application of theoretical concepts.	This chapter will be assessed in an end-of topic test. There will be a longer response question (6 marker) on **B4.7 on transport systems in plants.**	• Cardiologist • Haematologist • Vascular Surgeon • Phlebotomist • Plant Scientist / Botanist • Medical Scientist • Transplant Surgeon • Pulmonologist • Paramedic • Physiologist • Biotechnologist • Nurse (Cardiology or Haematology)
6	**B7: Non-communicable diseases**	• Understanding Risk Factors: What lifestyle choices can increase the risk of non-communicable diseases, and how can we reduce these risks? • Cardiovascular Disease: What causes cardiovascular diseases, and what changes can people make to help prevent or treat them? • Cancer Awareness: How does cancer develop, why is early detection important, and what are some common treatments? • Diabetes Overview: What are the differences between Type 1 and Type 2 diabetes, and how can each type be managed? • Smoking: what are the effects of smoking on the body and how does smoking affect an unborn baby? • Impact on Health Systems: How do non-communicable diseases affect individuals and healthcare systems, and why is prevention important?	**Integrity: Sensitive** discussions regarding substance abuse and the effects on a foetus. **Endurance:** Completing some tasks for B7 as independent learning tasks. **Versatility:** Application of theoretical concepts.	This chapter will be assessed in an end-of topic test. There will be a longer response question (6 marker) on **B7.3 on the effect of smoking on the heart.**	• Doctor • Cardiologist • Oncologist • Public Health Officer • Epidemiologist • Nutritionist/Dietitian • Pharmacist • Health and Wellness Coach • Biomedical Scientist • Genetic Counsellor • Medical Researcher • Radiographer