



St George's School
Biology
KS5 Curriculum

<p>PREREQUISITE KNOWLEDGE & SKILLS <i>The foundations needed to thrive in this subject.</i></p>	<p>Who should study this subject? Students should have a keen interest and curiosity about the processes that lie behind the complexities of life on Earth, as well as the ethical issues around some aspects of biological studies. Students should have good analytical skills and be willing to pay attention to detail. They should be confident in both numeracy and literacy skills. They will be keen to develop your scientific practical skills and understanding of scientific processes.</p> <p>Key Skills developed during KS4: Knowledge and understanding of the basic principles of the main biological disciplines of biochemistry, cell biology, physiology, genetics and ecology. Understanding of scientific method from GCSE required practicals. The ability to write clearly and logically and perform simple calculations such as ratios and percentages is essential.</p> <p>St George's course entry requirements: A minimum of five GCSEs or equivalent at grades 9–5, which would include English (Language or Literature), and must include Mathematics at grade 6 or above and either Combined Science Trilogy at grade 6/6 or Biology grade 6 or above (if studying separate sciences). Students will also be required to take Biology with at least one subject that will help develop scientific thinking (Chemistry, Physics, Psychology or Mathematics), or with a subject that has a biological component (Geography or Physical Education).</p>
<p>QUALIFICATION <i>Exam Board, aims and objectives.</i></p>	<p>AQA A-level Biology (7402) This course aims</p> <ul style="list-style-type: none"> • develop essential knowledge and understanding of different areas of the subject and how they relate to each other • develop and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods • develop competence and confidence in a variety of practical, mathematical and problem solving skills • develop their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject • understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society. <p>Course Objectives</p> <ul style="list-style-type: none"> • AO1: Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures • AO2: Apply knowledge and understanding of scientific ideas, processes, techniques and procedures: in a theoretical context; in a practical context; when handling qualitative data; when handling quantitative data • AO3: Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to: make judgements and reach conclusions; develop and refine practical design and procedures
<p>ASSESSMENT <i>Internal monitoring and final assessment.</i></p>	<p>Internal Assessment: End of topic tests Year 12 End of Year assessment (Summer term) Year 13 Mock exam (Spring term) Required practicals - 12 practicals (some in several parts) assessed throughout the course</p> <p>Final assessment: Paper 1 Topics 1–4 including practical techniques (Year 1 Topics) 35% Paper 2 Topics 5–8 including practical techniques (Year 2 Topic) 35% Paper 3 Topics 1–8 30%</p>

	Practical assessment (pass/fail) – teacher assessed. A pass is essential for most science-based degree courses, but this does not directly contribute to the overall A Level grade. Students are assessed on both specific practical techniques and general scientific skills.
ENRICHMENT <i>Trips & Visits, wider reading, etc.</i>	<p>Visits and Events: UKBC Biology Olympiad (usually Yr13 March, Yr12 January); Amgen Biotech Experience; Rothamsted Microscopy visit</p> <p>Wider reading: Biological Science Review</p>
NEXT STEPS <i>Where this subject can take you.</i>	<p>Related University Courses: Biomedical Sciences, Biochemistry, Dentistry, Dietetics, Earth Sciences, Environmental Science, Forensic Science, Geology, Medical Science, Medicine, Nursing, Pharmacy, Physiotherapy, Sports Science, and Veterinary Science.</p> <p>Career Paths: Careers directly related to Biology include medical professions, pharmacy, physiotherapy, biomedical engineering, research science (life sciences), microbiology, marine biology, conservation, and ecology, environmental management, food science, agricultural engineering and zoology. The transferable skills developed would also be useful in a diverse range of careers including: law, business analysis, psychology (Biology is a requirement for some Psychology degrees).</p>

Year 12

Autumn Term	<p>Topics: Biological molecules; Nucleic Acid; Cells; Transport across cell membranes; Cell recognition and the immune system. Required practicals- investigating enzyme controlled reaction; mitosis root tip squash</p> <p>Skills: Knowledge of fundamental biological facts and practical procedures; understanding of key biological conceptual models; development of maths skills; introduction to scientific report writing conventions; practical skills; scientific drawings and risk assessment</p> <p>Assessment: End of topic tests; Required practical lab reports.;</p>
Spring Term	<p>Topics: Exchange; Mass transport; DNA genes and protein synthesis; Genetic Diversity and Adaptation Required practicals - Osmosis; Membrane permeability; Heart dissection</p> <p>Skills: Knowledge and understanding of fundamental biological processes, development of practical, observational and research skills.</p> <p>Assessment: End of topic tests; Required practical lab reports.</p>
Summer Term	<p>Topics: Biodiversity; Populations and the ecosystem; Introduction to statistics; Amgen Biotechnology Experience. Required practical - Aseptic technique</p> <p>Skills: Knowledge and understanding of fundamental biological processes, development of practical and research skills, developing understanding and use of statistical techniques.</p> <p>Assessment: Mock Exam; End of topic tests; Required practical lab reports.</p>

Year 13

Autumn Term

Topics: Populations and the ecosystem; Photosynthesis, Respiration; Inherited change; Response to stimuli; Nervous coordination and muscle
Required Practical - Chromatography; Hill reaction; Respiration; Movement of animals

Skills: Knowledge and understanding of fundamental biological processes and making synoptic links; development of practical and research skills, use of statistical testing.

Assessment: End of topic tests; Required practical lab reports.

Spring Term

Topics: Nervous coordination and muscle; Homeostasis; Populations and evolution; Gene expression; Recombinant DNA technology
Required Practical - Dilution series

Skills: Knowledge and understanding of fundamental biological processes and making synoptic links; development of practical and research skills, use of statistical testing.

Assessment: Mock Exam; End of topic tests; Required practical lab reports.

Summer Term

Topics: Revision of all topics including required practicals and Maths skills. Synoptic essay practice

Skills: Consolidation of course content, synoptic links between topics, past exam question practice and synoptic essay writing