BIOLOGY

Curriculum Overview

Key Stage – KS5 Year -13

JOHN PORT SPENCER ACADEMY

Joy Progress Success Act with care, kindness, respect and integrity

Our curriculum is carefully sequenced to ensure cumulative knowledge and progression. Each unit builds on the last, with clear concepts that students must grasp to progress. We define end points to illustrate what mastery looks like by year-end.

Location of resources:	**John Port Spencer Academy Share Point – KS5 Science - Biology**
Curriculum intent and rationale:	The intent of the Year 13 AQA A-Level Biology curriculum is to build on the foundational knowledge and skills developed in Year 12 by exploring more complex biological systems and processes in greater depth. The rationale is to enable students to make connections across different areas of biology, such as homeostasis, energy transfers, genetics, evolution, and ecosystems, fostering a holistic understanding of how life operates at molecular, cellular, and ecological levels. This stage of the curriculum is designed to challenge students intellectually, encouraging critical thinking, data interpretation, and problem-solving through both theoretical and practical contexts. Students continue to consolidate and demonstrate mastery of CPAC skills through more advanced required practicals, reinforcing their ability to apply scientific methods confidently and independently. The Year 13 curriculum also supports students in preparing for higher education or careers in science by emphasising synoptic links, extended responses, and the application of biology to real-world issues.
National Curriculum Links:	

What content needs to be covered? Key Knowledge and skills / misconceptions to address (with vocab in bold and spelling underlined)
By the end of the year students will know:

Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Students will learn key knowledge and skills about: **<u>Section 5 Energy transfer in and between organisms</u>** *Photosynthesis* • Overview of photosynthesis • The light-dependant reaction • The light independent reaction *Respiration* • Glycolysis • Link reaction and Krebs cycle • Oxidative phosphorylation • Anaerobic respiration *Energy and Ecosystems* • Food chains and energy transfer • Energy transfer and productivity • Nutrient cycles • Use of natural and artificial fertilisers • Environmental issues concerning use of nitrogen-containing fertilisers **Required Practical 7 –** Use of chromatography to investigate the pigments isolated from leaves of different plants	**Students will learn key knowledge and skills about:** **PPE 1** **<u>Section 6 Organisms respond to changes in their environment</u>** *Response to stimuli* • Survival and response • Plant growth factors • A reflex arc • Receptors • Control of heart rate *Nervous coordination and muscles* • Neurones and the nervous system • The nerve impulse • Passage of an action potential • Speed of the nerve impulse • Structure and function of synapses • Transmission across a synapse • Structure of skeletal muscle • Contraction of skeletal muscle *Homeostasis* • Principles of homeostasis • Feedback mechanisms • Hormones and the regulation of blood glucose concentration • Diabetes and its control	**Students will learn key knowledge and skills about:** British Biology Olympiad competition **<u>Section 7 Genetics, populations, evolution and ecosystems</u>** *Inherited change* • Studying inheritance • Monohybrid inheritance • Probability and genetic crosses • Dihybrid Inheritance • Codominance and multiple alleles • Sex-Linkage • Autosomal Linkage • Epistasis • The chi-squared test *Populations and evolution* • Population genetics • Variation in phenotype • Natural selection • Effects of different forms of selection on evolution • Isolation and speciation *Populations in ecosystems – review, recap, recover (taught end of y12)* • Populations in ecosystems • Variation in population size • Competition • Predation • Investigating populations	**Students will learn key knowledge and skills about:** **PPE 2** <u>Continue to teach section 7</u> **<u>Section 8 The control of gene expression</u>** • *Gene expression* • Gene mutations • Stem cells and totipotency • Regulation of transcription and translation • Epigenetic control of gene expression • Gene expression and cancer • Genome projects *Recombinant DNA Technology* • Producing DNA fragments • In Vivo gene cloning – the use of vectors • In vitro gene cloning – the polymerisation chain reaction • Locating genes, genetic screening and counselling • Genetic fingerprinting **Key Language terminology:** Gene, Transcription, Translation, Promoter, Operator, Regulatory gene, Repressor, RNA polymerase, mRNA, tRNA, Introns, Exons, Splicing, Transcription factors, Epigenetics, DNA methylation, Histone acetylation, Chromatin, Euchromatin, Heterochromatin, siRNA, miRNA,	**Students will learn key knowledge and skills about:** <u>Continue to teach section 8</u> **<u>Preparation for external examinations</u>** • Review / Recap / Recover – Focus on Application / Challenge • Review / Recap / Recover – Focus on Compulsory practical skills • Review / Recap / Recover – Focus on Math skills	

Required Practical 8 –Investigation into the effect of a named factor on the rate of dehydrogenase activity in the extraction of chloroplasts

Required Practical 9 – Investigation into the effect of a named variable on the rate of respiration of cultures of single celled organisms

Key Language terminology:

Photosynthesis, Chloroplast, Thylakoid, Granum, Grana, Stroma, Photosystem, Photosystem I, Photosystem II, Chlorophyll, Photolysis, NADP, NADPH, ATP Synthase, Chemiosmosis, Light-dependent reaction, Light-independent reaction, Calvin Cycle, Rubisco, RuBP, GP, TP, Triose phosphate, Glycerate-3-phosphate, Respiration, Glycolysis, Pyruvate, Link reaction, Acetyl-CoA, Krebs cycle, Mitochondria, NAD, NADH, FAD, $FADH_2$, ATP, Electron Transport Chain, Proton gradient, Oxidative phosphorylation, Oxygen, Anaerobic respiration, Aerobic respiration, Lactate, Alcoholic fermentation, Lactate fermentation, Ethanol, Ecosystem, Biomass, Trophic level, Producer, Consumer, Primary consumer, Secondary consumer, Tertiary consumer, Decomposer, Saprobiont, Net Primary Production, Gross Primary Production, Respiratory losses, Net production, Energy transfer efficiency, Pyramids of biomass, Pyramids of energy, Fertiliser, Organic fertiliser, Inorganic fertiliser, Leaching, Eutrophication.

Challenge:
Use Higher-Order Questioning
Students will be asked ..
Why does chemiosmosis increase ATP yield efficiency?

- Control of blood water potential – structure of the nephron
- Role of the nephron in osmoregulation
- The role of hormones in osmoregulation

Required Practical 10: Investigation into the effect of an environmental variable on the movement of an animal using either a choice chamber or maze

Required Practical 11: Production of a dilution series of a glucose solution and the use of colorimetric techniques to produce a calibration curve with which to identify the concentration of glucose in an unknown urine sample

Key Language terminology:

Homeostasis, Negative feedback, Receptor, Effector, Water potential, Stimulus, Neurone, Resting potential, Action potential, Depolarisation, Repolarisation, Hyperpolarisation, All-or-nothing principle, Refractory period, Saltatory conduction, Synapse, Synaptic transmission, Reflex arc, Reflex action, Taxis, Kinesis, Tropism, IAA, Insulin, Glucagon, Beta cells, Alpha cells, Glycogenesis, Glycogenolysis, Gluconeogenesis, Second messenger, cAMP, Adrenaline, Osmoregulation, ADH, Osmoreceptors, Aquaporins,

Challenge:

Application-Based Questions

Students will be given exam questions to apply their knowledge. For example: "How would a malfunction in the sodium-potassium pump affect the transmission of nerve impulses?"

- Succession
- Conservation of habitats

Key Language terminology:

Gene, Allele, Locus, Genotype, Phenotype, Dominant, Recessive, Codominant, Homozygous, Heterozygous, Monohybrid, Dihybrid, Test cross, Punnett square, Chi-squared test, Genetic variation, Mutation, Meiosis, Crossing over, independent assortment, Selection pressure, Gene pool, Allele frequency, Genetic drift, Stabilising selection, Directional selection, Disruptive selection, Speciation, Reproductive isolation, Hardy-Weinberg principle

Challenge:

Complex Genetic Crosses
Students will attempt codominance, multiple alleles, and epistasis problems. Students will be asked to predict phenotypic ratios and explain deviations using epigenetics or lethal alleles.

Data Interpretation and Statistics
Students will use real or simulated population data to calculate allele frequencies using the Hardy-Weinberg equation.
Students will be challenged to interpret chi-squared test results and justify conclusions about inheritance patterns.

Evolutionary Scenarios
Students will be Presented with case studies (e.g. antibiotic resistance, peppered moths) and asked to
•Identify selection pressures
•Predict changes in allele frequency
•Explain speciation mechanisms

Misconceptions:

Students commonly confuse genotype with phenotype, believe dominant alleles are always more common or stronger, and find codominance, multiple alleles, and epistasis difficult to grasp. In

RNA interference, Mutation, Substitution, Deletion, Insertion, Frame shift, Oncogene, Tumour suppressor gene

Challenge:

Deep-Dive into epigenetics
Students will compare and contrast DNA methylation and histone acetylation, and predict their effects on gene expression.

Synoptic Links
Students will Link gene expression to cancer biology by exploring the roles of oncogenes and tumour suppressor genes and connect to transcription and translation from earlier topics, reinforcing the central dogma of molecular biology.

Ethical and Real-World Applications
Students will debate the ethical implications of manipulating gene expression in humans.

Conceptual Puzzles and Scenarios

Students will be Presented with "what if"

scenarios, such as:
"What would happen if a tumour suppressor gene was permanently silenced by methylation?"
"How would gene expression be affected if histone acetylation was blocked?"
Students will predict outcomes and justify their reasoning using molecular mechanisms.

Misconceptions:

Common misconceptions about the complexity of gene regulation and expression. Students may believe all genes are constantly active and often confuse the roles of transcription factors and RNA polymerase. In epigenetics, students frequently mix up the effects of DNA methylation and histone acetylation, and wrongly assume epigenetic changes are always permanent or inherited. RNA interference is another tricky area, with the introduction of siRNA. Additionally, students often think all mutations are harmful and struggle to differentiate between

What would happen if rubisco activity decreased? How could the efficiency of energy transfer be improved in a food chain? **Data Interpretation & Mathematical Challenges** Students will: Interpret real-life experimental graphs (e.g. light intensity vs. photosynthesis rate). Calculate net production, ATP yield, or respiratory quotient (RQ). Work with biomass data, energy transfer efficiency calculations, and productivity formulas. **Application to Unfamiliar Contexts** Student will be provided with unfamiliar situations that use the same principles: • Photosynthesis in aquatic plants, algae, or genetically engineered crops. • Respiration in parasites or anaerobic bacteria. • Ecosystem productivity in extreme environments (e.g. deep sea, tundra). **Experimental Design & Evaluation** Students will be asked to Identify control variables, suggest improvements, and discuss validity/reliability throughout CPAC required practical's **Integrate Synoptic Thinking** Students will start to link Section 5 with other parts of the spec: Photosynthesis and energy flow relate to ecological succession and competition. **Misconceptions:** In AQA A-level Biology Section 5, students often confuse key	**Higher-Order Thinking Tasks** Students will be pushed beyond recall: •Analyse: Compare hormonal vs nervous responses in terms of speed, duration, and specificity. •Evaluate: Debate the effectiveness of negative feedback in maintaining homeostasis. •Create: Design an experiment to investigate the preferred environments of woodlice **Interleaving and Synoptic Links** Students will be encouraged to draw connections with other topics: Link neuronal communication with muscle contraction (e.g., neuromuscular junctions). Connect homeostasis with enzymes and metabolism (e.g., effect of temperature on enzyme activity). **Misconceptions:** Common misconceptions include thinking that nerve impulses vary in strength (rather than frequency), confusing the roles of sodium and potassium ions in action potentials, and misunderstanding the differences between synaptic transmission and neuromuscular junctions. Students also frequently mix up taxis and kinesis, believe reflexes involve the brain, and misinterpret the roles of receptors and effectors. In homeostasis, they often confuse negative and positive feedback, and struggle with hormonal control of blood glucose, especially the second messenger model. Additionally, interpreting data and linking it to physiological processes remains a key challenge.	population genetics, students often misapply the Hardy-Weinberg principle, mix up allele and genotype frequencies, and misunderstand genetic drift as a form of selection. Evolutionary concepts also pose challenges, particularly the mistaken belief that natural selection is goal-directed, and confusion around the mechanisms of speciation and types of selection.	oncogenes and tumour suppressor genes in the context of cancer.		

processes, such as thinking oxygen in photosynthesis comes from CO_2, or that ATP is only made in mitochondria. They may assume energy is recycled like nutrients, or that all energy in food is passed on in ecosystems. Common mix-ups include NAD vs. NADP, and mistaking ATP as a long-term energy store. Clarifying these points helps build accurate understanding of photosynthesis, respiration, and energy transfer.					
Previous learning that is particularly relevant:					
Section 5 link to prior learning from earlier topics and GCSE Biology. This includes knowledge of cell structures such as mitochondria and chloroplasts, as well as the role of ATP as the energy currency of the cell. An understanding of enzymes and biological molecules, particularly carbohydrates like glucose, is essential for grasping metabolic pathways. Familiarity with transport mechanisms across membranes, such as diffusion and active transport, underpins the movement of substances involved in respiration and photosynthesis. Students should also recall principles of gas exchange and energy transfer in ecosystems, including food chains and trophic levels. These foundational ideas support the more detailed biochemical and ecological content covered in respiration, photosynthesis, and energy transfers Section 6 of the AQA A-level Biology specification builds on key ideas from both GCSE Biology and earlier A-level topics by deepening understanding of how organisms detect and respond to changes in their internal and external environments. It revisits GCSE concepts like reflexes, hormonal control, and homeostasis, expanding them with detailed mechanisms such as synaptic transmission, muscle contraction, and kidney function. It also draws on earlier A-level knowledge of biological molecules (e.g. ATP, proteins), cell structure and transport, and systems like the circulatory and endocrine systems. This section integrates molecular, cellular, and physiological concepts to explain how complex responses are coordinated in living organisms.		Section 7 of the AQA A-level Biology specification — *Inheritance, Populations and Evolution* — builds directly on prior learning from both GCSE Biology and earlier A-level topics by deepening understanding of genetic principles and their role in evolution. At GCSE, students are introduced to basic inheritance patterns, natural selection, and variation, which are expanded at A-level to include monohybrid and dihybrid crosses, codominance, epistasis, and the Hardy-Weinberg principle. This section also links to earlier A-level topics such as DNA structure and replication (from Section 2), gene expression and mutation (from Section 4), and meiosis (from Section 3), all of which underpin the mechanisms of inheritance and variation. It also connects to ecology (Section 3.7) by exploring how genetic variation and selection pressures influence population dynamics and speciation. Overall, Section 7 integrates molecular genetics with evolutionary theory to explain how genetic information is passed on and how populations change over time. Section 8 of the AQA A-level Biology specification, *The Control of Gene Expression*, builds on GCSE knowledge of DNA, genes, and mutations by exploring how gene activity is regulated in cells. It deepens understanding from earlier A-level topics such as DNA structure and protein synthesis (Section 2 and 4), showing how transcription factors, epigenetic changes, and RNA interference influence whether genes are switched on or off. This section also connects to inheritance and variation (Section 7), explaining how gene regulation affects phenotype and contributes to disease and evolution. Overall, it integrates molecular biology with genetics and biotechnology, highlighting how gene expression is controlled and manipulated in both natural and applied contexts.			
Future Learning - How content prepares students for future units, Key Stage 4, or Key Stage 5?					
Section 5 of the AQA A-level Biology specification, *Energy Transfers in and Between Organisms*, lays essential foundations for later topics by introducing the biochemical processes that power life. It builds on GCSE knowledge of photosynthesis and respiration, expanding into detailed pathways like the light-dependent and light-independent reactions, glycolysis, the Krebs cycle, and oxidative phosphorylation. This section underpins later topics such as muscle contraction (Section 6), where ATP is vital, and gene expression (Section 8), where energy is needed for		Section 7 of AQA A-level Biology—covering inheritance, populations, and evolution—provides a crucial framework for understanding genetic variation, natural selection, and the mechanisms driving evolution. It introduces key concepts such as Mendelian genetics, gene interactions, Hardy-Weinberg equilibrium, and speciation, which are essential for later topics like genetic technologies, biodiversity, and classification. This section also strengthens students' ability to apply mathematical models and interpret genetic data, laying the groundwork for synoptic links across molecular biology, ecology, and biotechnology. Overall, it deepens understanding of how genetic and environmental factors shape life over time.			

transcription and translation. It also supports understanding of ecosystems and nutrient cycles (Section 3.5), linking energy flow to population dynamics and environmental interactions. Overall, Section 5 provides the biochemical context necessary for understanding how organisms function, grow, and interact with their environment. Section 6 of AQA A-level Biology lays a vital foundation for future learning by introducing how organisms detect and respond to internal and external changes. It establishes key principles like negative feedback, cell signalling, and the roles of receptors and effectors, which are essential for understanding later topics such as hormonal control, kidney function, and muscle physiology. This section also develops analytical and experimental skills, encourages systems thinking, and connects with broader biological themes, making it a cornerstone for synoptic understanding across the course.	A-level AQA Biology provides a strong foundation for future learning in degrees, apprenticeships, and jobs by developing both subject-specific knowledge and transferable skills. It introduces core biological principles—such as genetics, physiology, ecology, and molecular biology—that are essential for degrees in biology, medicine, biomedical sciences, environmental science, and related fields. The course also emphasizes practical skills, data analysis, and scientific reasoning, which are highly valued in laboratory-based apprenticeships and technical roles in healthcare, research, and biotechnology. Additionally, it fosters critical thinking, problem-solving, and communication skills, which are beneficial in a wide range of careers beyond science.	

Outcomes:
By the end of the year pupils will be able to solve/create/produce/write:

- **Solve** complex biological problems involving homeostasis, inheritance, gene expression, and ecosystems by applying multi-topic knowledge and interpreting unfamiliar scenarios.
- **Create** detailed experimental plans and investigations, including independent CPAC practical's, demonstrating a deep understanding of scientific method, variables, and reliability.
- **Produce** critical evaluations of data and experimental outcomes, using statistical tests such as chi-squared and standard deviation to support conclusions.
- **Write** extended, synoptic responses that link concepts across molecular biology, physiology, genetics, and ecology, using precise scientific language and logical argumentation.

Assessment Strategy How we know our students are knowing and remembering more –
Data from hunting not fishing, formative and summative assessment/s is used to adapt teaching and provide targeted challenge and intervention, supporting SEND and disadvantaged pupils.

Formative:	**Summative (& cumulative)**	**Opportunities to revisit past learning:**
Homework booklets 1-11 Practical booklets 7-12 Do it now recall questions Questioning Extended written response questions Recall Knowledge Tests Development tasks Exam Question Practice White boards are 'on hand' in every lessons and are used routinely in every lesson to check understanding at each point of the learning journey of the lesson. Teachers circulate to make sure that students understand what they are doing and assess the understanding, reteaching within the lesson where needed.	**Half term 1:** Section 4 exam / Photosynthesis / Respiration/ Energy & ecosystems **Half term 2:** Section 5 exam / Response to stimuli / Nervous coordination & Muscles / Homeostasis / PPE 1 **Half term 3:** Section 6 exam / inheritance exam / populations in ecosystems **Half term 4:** PPE 2 / section 7 exam **Half term 5** Section 8 exam	Do it now activity at the start of each lesson **Opportunities for homework (including apps):** Up-Learn E-revision Homework booklets Practical booklets Exam Questions

How is the curriculum adapted to meet the needs of SEND and disadvantaged pupils, while maintaining high expectations?

Repetition & retrieval practice reinforce key ideas, Scaffolding and visual aids used during teaching, Extra support sessions afterschool, targeted feedback, Extra time given in assessment
They experience success in every lesson, increasing confidence and a belief in themselves

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Demonstrating excellence to them so that they understand what they are aiming for to increase the expectation of what they can achieve
Support with resources at home. We ensure they have the text book and a workbook

Wider Curriculum and Enrichment – cultural capital and real world application -

Enriching experiences:

In Year 13 A-level Biology, enrichment experiences become more advanced and student-led, particularly through increased independence in planning CPAC (Common Practical Assessment Criteria) practicals. Rather than being given step-by-step methods, students are encouraged to design their own experiments—developing hypotheses, selecting appropriate apparatus, and refining techniques. This shift not only deepens their understanding of scientific investigation but also builds confidence, critical thinking, and problem-solving skills that are essential for university-level study, apprenticeships, and science-based careers.
Weekly after-school support sessions focus on specific topics, helping students strengthen their knowledge and confidence in challenging areas. Participation in national competitions such as the British Biology Olympiad allows students to apply their skills beyond the curriculum, with Olympiad participants aged 14–19 also gaining a year's free BioNet membership of the Royal Society of Biology, offering access to scientific resources and events. In addition, MedSoc meetings are held after school to provide guidance and information for students applying to competitive courses such as medicine and dentistry, supporting them with personal statements, work experience, and interview preparation.

Our curriculum supports the school value of:

Joy	*Foster enthusiasm and engagement by* There is a great deal of joy in studying AQA A-level Biology, as the subject is brought to life through engaging and interactive learning experiences. Students take part in exciting experiments that allow them to actively explore and understand key biological concepts. Lessons often extend beyond the classroom, particularly in topics like ecosystem and populations, where outdoor investigations and activities such as quadrating and transects makes learning memorable and hands-on. Abstract ideas, such as the structures of carbohydrates and proteins, are made accessible through model building and practical tasks, helping students visualise molecules like glucose, maltose, amino acids, and dipeptides. The use of games, quizzes, and stop-motion animations further enhances engagement, encouraging creativity and reinforcin learning in fun and dynamic ways. While lessons follow a consistent structure, the wide variety of

Literacy, Oracy and disciplinary language:

Reading:

Students read and comprehend scientific texts, including textbooks and articles, to grasp concepts and information. CPAC 1 assesses students ability to follow written instructions enabling them to carry out experimental techniques or procedures.

Writing:

Writing is essential in A-level Biology for demonstrating understanding and scientific thinking. Practical methods must be written with precision, clear sequencing, and correct control of variables. Conclusions should evaluate evidence, explain results, and link back to hypotheses. Extended responses require logical structure, clarity, and connections between topics. Using correct scientific terminology shows accuracy, depth, and fluency in biology. The Paper 3 essay tests a student's ability to synthesise ideas from across the specification.

Listening

Students take part in active listening as this is essential for understanding scientific concepts presented by teachers and peers, and for engaging in meaningful discussions.

Speaking

Students say the subject specific vocabulary so that they can explain scientific ideas accurately and are more likely to use these words in their written work. Students work in groups to produce presentations to their peers – planning and researching topics such as cells, lung and heart diseases.

Cross-Curricular opportunities / Opportunities to develop 'character':

Chemistry
Many biological processes studied in Year 13—such as respiration and photosynthesis—are deeply rooted in chemical principles. Understanding molecular structures, bonding, and reaction pathways from A-level Chemistry enhances comprehension of biochemical mechanisms, making the two subjects highly complementary.

Mathematics
Involves statistical tests (e.g. chi-squared, t-tests), standard deviation, and data analysis
Requires graph interpretation and numeracy in practical's and exam questions

Psychology
Strong links in areas like the nervous system and the role of neurotransmitters.

Geography
Ecological topics in Biology, such as succession, conservation, and the impact of human activity on ecosystems, closely align with themes in Geography and Environmental Science. Students explore real-world environmental issues, population dynamics, and sustainability, encouraging interdisciplinary thinking about global challenges.

Physical Education (PE)
Supports learning on muscle contraction, respiration, and homeostasis
Builds understanding of human physiology and performance

English, History, Philosophy
Essay writing and research skills are transferable
Ethical discussions in biology link to topics like genetic engineering, drug trials, and organ donation

Our curriculum supports personal development by:

Character development is also embedded throughout the course. Fieldwork and practical investigations promote resilience, teamwork, and responsibility, while participation in events like the Biology Olympiad encourages ambition and academic curiosity. Group work and peer collaboration foster respect, kindness, and integrity, as students work together on tasks such as presentations or ecological sampling. Opportunities to represent the department at open evenings or engage in MedSoc meetings build leadership, confidence, and a sense of community.

Careers / Employability skills:

	activities ensures that each session feels fresh and different. Collaborative tasks, including group work and presentations on topics like cells and lung diseases, not only support deeper understanding but also build confidence and communication skills, making A-level Biology a joyful and stimulating subject to study.		
Progress	*We monitor and support progress through* Every lesson teachers monitoring the progress of the students (see formative assessment). The results from each topic tests are monitored to ensure students are making progress towards their target grade.		
Success	*We celebrate success* by Success in A-level Biology is celebrated in a variety of meaningful and motivating ways that recognise student effort, achievement, and engagement. Praise is used regularly during lessons to highlight in-the-moment success and boost confidence. Formal recognition is given through gold, silver, bronze, highly commended, or commended certificates awarded to students who excel in the British Biology Olympiads, celebrating their performance in national competitions. Scientific pin badges are presented to students who represent the biology department at key events such as Year 6 and Sixth Form open evenings, acknowledging their contribution to the wider school community. Additional recognition is given through certificates and pin badges for students who log the most hours on platforms like UpLearn, rewarding dedication to independent study. Exceptional work and achievements are also shared in the school newsletter, ensuring students are celebrated publicly and their successes are recognised by the wider school and home community. These celebrations of success foster a positive learning environment and encourage students to take pride in their achievements.		
Act with care, kindness, respect, and integrity	*We build meaningful connections with our students by* A-level Biology students are encouraged to act with care, kindness, respect, and integrity both in and out of the classroom. In practical work, they handle equipment, living organisms, and the environment		

The AQA A-Level Biology curriculum helps develop key employability skills such as analytical thinking, problem-solving, and numeracy through data analysis and practical investigations. Students also gain technical lab skills, improve communication through scientific writing, and build critical thinking by evaluating experiments and ethical issues. Teamwork is fostered through group work, while independent learning, organisation, and time management are developed through research tasks and meeting deadlines. These skills are valuable for both science-related careers and a wide range of other professions.

How does the curriculum link to the following employability skills:

Listening – Active listening, which involves focused attention and understanding of what others are saying. It's essential for effective communication, collaboration, and problem-solving. Active listening demonstrates respect, builds rapport, and helps individuals grasp information accurately and efficiently

Speaking – Speaking skills are crucial for science professionals as they enable effective communication of complex information, collaboration in teams, and successful presentation of research findings. These skills are essential for securing and excelling in scientific careers, encompassing clear and concise communication.

Problem solving – Problem-solving is a crucial employability skill, particularly in science fields, as it involves identifying and analysing problems, developing solutions, and evaluating their effectiveness. Scientific problem-solving relies on critical thinking, creativity, and a systematic approach to finding solutions. Employers highly value candidates who demonstrate strong problem-solving abilities, as these skills are transferable to various work situations and contribute to career success.

Aiming high – Setting ambitious goals, developing relevant skills, and actively seeking opportunities for growth and advancement. It involves proactive planning, a positive attitude towards challenges, and the ability to learn from setbacks. This approach is crucial for success in scientific careers, as it enables individuals to tackle complex problems, collaborate effectively, and contribute to innovation.

Critical thinking – Critical thinking is a crucial employability skill, particularly valuable in science-related fields. It involves actively analyzing information, evaluating evidence, and solving problems using reasoned judgment. For science graduates, critical thinking is essential for data analysis, research design, and navigating complex scientific concepts

Staying positive – Staying positive and developing a growth mindset are crucial for success in science-related careers. A positive attitude, resilience, and adaptability are valuable employability skills that can be cultivated through self-reflection, practice, and seeking support. These qualities enhance problem-solving, foster innovation,

Leadership – Leadership skills, in particular, demonstrate an individual's ability to motivate, manage, and influence others, making them valuable assets to any organization

	responsibly, showing care for both the materials and the ethical implications of scientific study. They demonstrate kindness and respect by supporting one another during group tasks, listening actively, and offering constructive feedback in a collaborative and inclusive way. Integrity is shown through honest data collection, accurate recording of results, and upholding the values of academic honesty, particularly in CPAC required practical's. Students also show respect for their learning environment by preparing for lessons, meeting deadlines, and engaging positively with staff and peers. Whether helping a classmate understand a difficult concept, working sensitively during ecological fieldwork, or representing the department at open evenings, A-level Biology students model the values that underpin both good science and good character.		**Teamwork –** Teamwork is a crucial employability skill involving working effectively with others to achieve a shared goal. It encompasses various sub-skills like communication, problem-solving, active listening, and conflict resolution. Developing these skills enhances collaboration, efficiency, and overall productivity **Creativity –** Creativity is a highly valued employability skill across all fields, including science and technology. It enables individuals to approach problems with innovative solutions, adapt to change, and contribute to advancements. **Employment Sectors discussed include:** In AQA A-Level Biology, employment sectors linked to biology include healthcare and medicine, environmental conservation, research and development, agriculture and food production, biotechnology, industry, and education. These sectors apply biological knowledge in areas such as disease treatment, ecological management, genetic engineering, food security, and scientific communication. Understanding how biology contributes to these fields helps students appreciate its real-world relevance and career opportunities.

Curriculum impact is evaluated through pupil study, work scrutiny, and progress data. Findings inform regular curriculum review to ensure continuous improvement.

When was this curriculum last reviewed? Include date	What changes were made and why?	How is ongoing improvement ensured?
Always on going …….	Recent changes include updating HW booklets to include recently published questions and removing older pre-specification questions now there is a broader range to pick from. Curriculum pathways have been written to provide students with a clear, structured progression through their subject, helping them understand how their learning develops over time.	Ongoing improvement in A-level Biology is supported through subject-specific CPD and regular exam board training, ensuring teachers stay current with specification updates and assessment expectations. Departmental meetings are used to share best practice, moderate marking, and review teaching strategies. After each examination series, detailed analysis of AQA exam results and mark schemes helps identify areas for development and informs future teaching. Learning walks and peer observations further support consistent, high-quality delivery across the department, creating a reflective and collaborative approach to improvement.