

2023-2024 Year 11 Curriculum and Assessment Plan for Separate Biology

The curriculum and assessment of pupils at this stage of education has been carefully designed to build upon the topics delivered in KS3, Year 9 and Year 10					
<p>Half Term 1:</p> <p>All pupils will know: The Homeostasis topic Pages 41-50 GCSE Biology Specification Specification for first teaching in 2016 (aqa.org.uk)</p> <p>All pupils will be assessed by: Cells in the body can only survive within narrow physical and chemical limits. They require a constant temperature and pH as well as a constant supply of dissolved food and water. In order to do this the body requires control systems that constantly monitor and adjust the composition of the blood and tissues. These control systems include receptors which sense changes and effectors that bring about changes.</p> <p>In this section we will explore the structure and function of the nervous system and how it can bring about fast responses. We will also explore the hormonal system which usually brings about much slower changes. Hormonal coordination is particularly important in reproduction since it controls the menstrual cycle. An understanding of the role of hormones in reproduction has allowed scientists to develop not only contraceptive drugs but also drugs which can increase fertility.</p>	<p>Subject specific skills being developed:</p> <ul style="list-style-type: none"> • 	<p>Half Term 2:</p> <p>All pupils will know: The inheritance topic Pages 51-65 GCSE Biology Specification Specification for first teaching in 2016 (aqa.org.uk)</p> <p>All pupils will be assessed by: By short recall activities, electronic automatically marked homework's and longer answer short tests focussed on the topics. There will also be a longer exam as part of the data gathering for the whole year group twice a year</p> <p>Impact- Why do we teach this? In this section we will discover how the number of chromosomes are halved during meiosis and then combined with new genes from the sexual partner to produce unique offspring. Gene mutations occur continuously and on rare occasions can affect the functioning of the animal or plant. These mutations may be damaging and lead to a number of genetic disorders or death. Very rarely a new mutation can be beneficial and consequently, lead to increased fitness in the individual. Variation generated by mutations and sexual reproduction is the basis for natural selection; this is how species evolve. An understanding of these processes has allowed scientists to intervene through selective breeding to produce livestock with favoured characteristics. Once new varieties of plants or animals have been produced it is possible to clone individuals to produce larger numbers of identical individuals all carrying the favourable characteristic. Scientists have now discovered how to take genes from one species and introduce them in to the genome of another by a process called genetic engineering. In spite of the huge potential benefits that this technology can offer, genetic modification still remains highly controversial</p>	<p>Subject specific skills being developed:</p> <ul style="list-style-type: none"> • Modelling behaviour of chromosomes during meiosis. • Historical developments of our understanding of the causes and prevention of malaria. • Interpret a diagram of DNA structure but will not be required to reproduce it. • Modelling insertions and deletions in chromosomes to illustrate mutations. • Appreciate that embryo screening and gene therapy may alleviate suffering but consider the ethical issues which arise • Use the theory of evolution by natural selection in an explanation. • Explain the benefits and risks of selective breeding given appropriate information and consider related ethical issues. • Interpret information about genetic engineering techniques and to make informed judgements about issues concerning cloning and genetic engineering, including GM crops. • Explain the potential benefits and risks of cloning in agriculture and in medicine and that some people 	<p>Half Term 3:</p> <p>All pupils will know: The Ecology Topic Pages 66- GCSE Biology Specification Specification for first teaching in 2016 (aqa.org.uk)</p> <p>All pupils will be assessed: By short recall activities, electronic automatically marked homework's and longer answer short tests focussed on the topics. There will also be a longer exam as part of the data gathering for the whole year group twice a year</p> <p>Impact - Why do we teach this? The Sun is a source of energy that passes through ecosystems. Materials including carbon and water are continually recycled by the living world, being released through respiration of animals, plants and decomposing microorganisms and taken up by plants in photosynthesis. All species live in ecosystems composed of complex communities of animals and plants dependent on each other and that are adapted to particular conditions, both abiotic and biotic. These ecosystems provide essential services that support human life and continued development. In order to continue to benefit from these services humans need to engage with the environment in a sustainable way. In this section we will explore how humans are threatening biodiversity as well as the natural systems that support it. We will also consider some actions we need to take to ensure our future health, prosperity and well-being</p>	<p>Subject specific skills being developed:</p> <ul style="list-style-type: none"> • Recording firsthand observations of organisms. • Extract and interpret information from charts, graphs and tables. • Interpret graphs used to model predator-prey cycles. • Interpret and explain the processes in diagrams of the carbon cycle, the water cycle. There are links with the water cycle to GCSE Chemistry 4.9.1.2 The Earth's early atmosphere. • Explain how waste, deforestation and global warming have an impact on biodiversity • Understand the conflict between the need for cheap available compost to increase food production and the need to conserve peat bogs and peatlands as habitats for biodiversity and to reduce carbon dioxide emissions • Evaluate the environmental implications of deforestation • Understand that the scientific consensus about global warming and climate change is based on systematic reviews of thousands

			<p>have ethical objections.</p> <ul style="list-style-type: none"> • Students should appreciate that the theory of evolution by natural selection developed over time and from information gathered by many scientists • The theory of speciation has developed over time. • Our current understanding of genetics has developed over time. • Data is now available to support the theory of evolution. • Appreciate why the fossil record is incomplete • Understand how scientific methods and theories develop over time • Understand how scientific methods and theories develop over time. • Interpret evolutionary trees 		<p>of peer reviewed publications.</p> <ul style="list-style-type: none"> • WS 1.3 Explain why evidence is uncertain or incomplete in a complex context. • Evaluate given information about methods that can be used to tackle problems caused by human impacts on the environment. Explain and evaluate the conflicting pressures on maintaining biodiversity given appropriate information • Calculate the efficiency of biomass transfer between trophic levels. • Interpret population and food production statistics to evaluate food security • Understand that some people have ethical objections to some modern intensive farming methods. • Evaluate the advantages and disadvantages of modern farming techniques <ul style="list-style-type: none"> • Understand how application of different fishing techniques promotes recovery of fish stocks
	<p>Reading Skills needed for this unit:</p> <p>Key Vocabulary: See specification</p>		<p>Reading Skills needed for this unit:</p> <p>Key Vocabulary: See specification</p>		<p>Reading Skills needed for this unit:</p> <p>Key Vocabulary: See specification</p>

	Opportunity for cross-curricular skill development <ul style="list-style-type: none"> • 		Opportunity for cross-curricular skill development <ul style="list-style-type: none"> • 		Opportunity for cross-curricular skill development <ul style="list-style-type: none"> • Extract and interpret information from charts, graphs and tables. • There are links with this content to GCSE Chemistry 4.9.3.1 Atmospheric pollutants from fuels • There are links within this section to Global warming. There are links within this section to Factors affecting food security (biology only). • Evaluate the environmental implications of deforestation
Half Term 4: All pupils will know: All Content GCSE Biology Specification Specification for first teaching in 2016 (aqa.org.uk) All pupils will be assessed: By short recall activities, electronic automatically marked homework's and longer answer short tests focussed on the topics. There will also be a longer exam as part of the data gathering for the whole year group twice a year Impact - Why do we teach this? REVISION	Subject specific skills being developed: <ul style="list-style-type: none"> • 	Half Term 5: Revision and External Examination	Subject specific skills being developed: <ul style="list-style-type: none"> • 	Half Term 6: Revision and External Examination	Subject specific skills being developed: <ul style="list-style-type: none"> •
	Reading Skills needed for this unit: Key Vocabulary:		Reading Skills needed for this unit: Key Vocabulary:		Reading Skills needed for this unit: Key Vocabulary:
	Opportunity for cross-curricular skill development <ul style="list-style-type: none"> • 		Opportunity for cross-curricular skill development <ul style="list-style-type: none"> • 		Opportunity for cross-curricular skill development <ul style="list-style-type: none"> •
Ensuring this curriculum meets the needs of all pupils: this curriculum has been designed to ensure pupils from all starting points will develop the key curriculum skills and knowledge identified. The curriculum design ensures that each unit forms part of the overall learning journey and there are opportunities for revisiting skills and linking together key pieces of knowledge. Whole Academy policies and practices are followed to tailor the delivery of the curriculum for individuals and groups of students. For example SEND students have individual learning profiles that outline needs/strategies to be used, Whole group RIPs are in place to identify key teaching strategies that will be used with individual teaching groups. Ongoing formative assessment and clear summative assessment points allow individual staff and departments to identify misconception and adjust curriculum appropriately.					
Enrichment opportunities: <ul style="list-style-type: none"> • School resources (rsb.org.uk) 					

Career opportunities/ links:
[Careers \(rsb.org.uk\)](https://www.rsb.org.uk)