



# Curriculum map – Y11 combined biology

YEAR 11	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC(s)	<b>Inheritance and variation</b>	<b>Evolution</b>	<b>Ecology</b>	<b>Ecology</b>	<b>Exam preparation</b>	<b>GCSE exams</b>
What students will know	<p>Meiosis leads to non-identical cells being formed while mitosis leads to identical cells being formed</p> <p>In sexual reproduction there is mixing of genetic information which leads to variety in the offspring</p> <p>Asexual reproduction involves only one parent and no fusion of gametes. There is no mixing of genetic information</p> <p>The genome of an organism is the entire genetic material of that organism</p> <p>Sequencing the human genome is important for tracing human migration patterns, understanding and treating inherited disorders and genes that cause diseases</p> <p>A dominant allele is always expressed, even if only one copy is present. A recessive allele is only expressed if two copies are present</p> <p>Some disorders are inherited. These disorders are caused by the inheritance of certain alleles</p> <p>Selective breeding (artificial selection) is the process by which humans breed plants and animals for particular genetic characteristics</p>	<p>Evolution is a change in the inherited characteristics of a population over time through a process of natural selection which may result in the formation of a new species</p> <p>Genetic engineering is a process which involves modifying the genome of an organism by introducing a gene from another organism to give a desired characteristic</p> <p>Fossils are the 'remains' of organisms from millions of years ago, which are found in rocks</p> <p>Extinctions occur when there are no remaining individuals of a species still alive</p>	<p>An ecosystem is the interaction of a community of living organisms (biotic) with the non-living (abiotic) parts of their environment</p> <p>Plants in a community or habitat often compete with each other for light and space, and for water and mineral ions from the soil. Animals often compete with each other for food, mates and territory</p> <p>Organisms have features (adaptations) that enable them to survive in the conditions in which they normally live. These adaptations may be structural, behavioural or functional</p> <p>Some organisms live in environments that are very extreme, such as at high temperature, pressure, or salt concentration. These organisms are called extremophiles.</p>	<p>Pollution kills plants and animals which can reduce biodiversity</p> <p>Humans reduce the amount of land available for other animals and plants by building, quarrying, farming and dumping waste</p> <p>The decay or burning of the peat releases carbon dioxide into the atmosphere</p> <p>Photosynthetic organisms are the producers of biomass for life on Earth</p> <p>All materials in the living world are recycled to provide the building blocks for future organisms</p> <p>Biodiversity is the variety of all the different species of organisms on earth, or within an ecosystem</p>		

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What students will be able to do	<p>Explain how meiosis halves the number of chromosomes in gametes and fertilisation restores the full number of chromosomes</p> <p>Describe that DNA is a polymer made up of two strands forming a double helix</p> <p>Construct genetic cross diagrams based on complete a Punnett square diagram and extract and interpret information from genetic crosses and family trees</p> <p>Use direct proportion and simple ratios to express the outcome of a genetic cross</p> <p>Carry out a genetic cross to show sex inheritance</p>	<p>Explain how evolution occurs through natural selection of variants that give rise to phenotypes best suited to their environment</p> <p>Describe the evidence for evolution including fossils and antibiotic resistance in bacteria</p> <p>Extract and interpret information from charts, graphs and tables such as evolutionary trees</p> <p>Use information given to show understanding of the Linnaean system</p>	<p>Suggest the factors for which organisms are competing in a given habitat</p> <p>Suggest how organisms are adapted to the conditions in which they live</p> <p>Extract and interpret information from charts, graphs and tables relating to the interaction of organisms within a community</p>	<p>Describe some of the biological consequences of global warming</p> <p>Describe both positive and negative human interactions in an ecosystem and explain their impact on biodiversity</p> <p>Extract and interpret information from charts, graphs and tables relating to the effect of biotic or abiotic factors on organisms within a community</p> <p>Use sampling techniques to investigate the effect of a factor on the distribution of this species</p>		
Beyond the classroom	<p>Cure for cystic fibrosis? <a href="#">FDA approves new breakthrough therapy for cystic fibrosis   FDA</a></p>	<p>Climate proof crops – 50% yield increase.... Feeding the future?</p> <p><a href="#">Scientists Use Exotic DNA To Help Create “Climate-Proof” Crops (scitechdaily.com)</a></p>	<p>Attack of the ants? <a href="#">Native eastern fence lizards changed their bodies and behavior in response to invasive red imported fire ants (theconversation.com)</a></p>	<p>Insect extinction risk? <a href="#">Climate Change Can Put More Insects at Risk for Extinction – Climate Change: Vital Signs of the Planet (nasa.gov)</a></p>		