

## Curriculum Map Year 11 - Biology

Topic Name	Term	Content / skills developed with link to NC / exam board subject content (if applicable)	Reflection on previous learning	Progress to future learning	Global Citizenship links	Qatar National Identity links
Human reproduction	1	<ul style="list-style-type: none"> <li>Describe the structure and function of the male and female reproductive systems.</li> <li>Understand the role of hormones in the menstrual cycle and the development of secondary sexual characteristics.</li> <li>Understand how the structure of the male and female reproductive systems is adapted for their functions.</li> <li>Understand the roles of oestrogen and progesterone in the menstrual cycle.</li> <li>Understand the roles of FSH and LH in the menstrual cycle.</li> <li>Describe the role of the placenta in the nutrition of the developing embryo.</li> <li>Understand how the developing embryo is protected by amniotic fluid.</li> </ul>	Year 7 Sexual reproduction in animals	Year 12 Biology – Unit 2 cells and development	PRIDE Prepare for future challenges Developing skills for the future	<p><b>Conscious thinking</b> about my <b>Actions</b></p> <p><b>Conscious thinking</b> about my <b>Future</b></p> <p><b>Conscious thinking</b> about my <b>Family</b></p> <p><b>Conscious thinking</b> about my <b>Health</b></p>
Plant reproduction	1	<ul style="list-style-type: none"> <li>Understand the differences between sexual and asexual reproduction.</li> <li>Understand that fertilisation involves the fusion of a male and female gamete to produce</li> </ul>	Year 8 Plants and reproduction	Year 12 Biology – Unit 2 cells and development	PRIDE Prepare for future challenges Developing skills for the future	<p><b>Conscious thinking</b> about my <b>Environment</b></p>

		<p>a zygote that undergoes cell division and develops into an embryo.</p> <ul style="list-style-type: none"> <li>• Describe the structures within a flower.</li> <li>• Understand that the growth of the pollen tube followed by fertilisation leads to seed and fruit formation.</li> <li>• Describe the structures of an insect-pollinated and a wind-pollinated flower and explain how each is adapted for pollination.</li> <li>• Understand how germinating seeds utilise food reserves until the seedling can carry out photosynthesis</li> <li>• Understand that plants can reproduce asexually by natural methods (illustrated by runners) and by artificial methods (illustrated by cuttings).</li> </ul>				<p><b>Conscious thinking</b> about my <b>Health</b></p>
Ecology & the environment	1	<ul style="list-style-type: none"> <li>• Understand the terms population, community, habitat, ecosystem, and biodiversity.</li> <li>• Recall how abiotic and biotic factors affect the population size and distribution of organisms</li> </ul>	<p>Year 7 Ecosystems</p> <p>Year 8 Rocks</p>	<p>Year 12 – Unit 2 Biodiversity and conservation</p> <p>Year 13 – Unit 4 energy flow, ecosystems, and the environment</p>	<p>PRIDE Prepare for future challenges Developing skills for the future</p>	<p><b>Conscious thinking</b> about my <b>Actions</b></p> <p><b>Conscious thinking</b> about my <b>Future</b></p>

		<ul style="list-style-type: none"> <li>• Recall the names given to different trophic levels, including producers, primary, secondary, and tertiary consumers, and decomposers</li> <li>• Understand the concepts of food chains, food webs, pyramids of number, pyramids of biomass and pyramids of energy transfer.</li> <li>• Understand the transfer of substances and energy along a food chain and explain why only about 10% of energy is transferred from one trophic level to the next.</li> <li>• Describe the stages in the carbon cycle, including respiration, photosynthesis, decomposition, and combustion</li> <li>• Describe the stages in the nitrogen cycle, including the roles of nitrogen fixing bacteria, decomposers, nitrifying bacteria.</li> <li>• Understand the biological consequences of pollution</li> </ul>				<p><b>Conscious thinking</b> about my <b>Country</b></p> <p><b>Conscious thinking</b> about my <b>Environment</b></p> <p><b>Conscious thinking</b> about my <b>Health</b></p>
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		<p>of air by sulfur dioxide and carbon monoxide</p> <ul style="list-style-type: none"><li>• Understand that water vapour, carbon dioxide, nitrous oxide, methane, and CFCs are greenhouse gases</li><li>• Understand how human activities contribute to greenhouse gases</li><li>• Understand how an increase in greenhouse gases results in an enhanced greenhouse effect and that this may lead to global warming and its consequences</li><li>• Understand the biological consequences of eutrophication caused by leached minerals from fertiliser.</li><li>• Understand the effects of deforestation, including leaching, soil erosion, disturbance of evapotranspiration and the carbon cycle, and the balance of atmospheric gases.</li></ul>				
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<p>Use of biological resources</p>	<p>1</p>	<ul style="list-style-type: none"> <li>• Understand the effects on crop yield of increased carbon dioxide and increased temperature in glasshouses</li> <li>• Understand how the use of fertiliser can increase crop yield</li> <li>• Understand the reasons for pest control and the advantages and disadvantages of using pesticides and biological control with crop plants</li> <li>• Explain the role of yeast in the production of food including bread</li> <li>• Describe the role of bacteria (Lactobacillus) in the production of yoghurt</li> <li>• Describe the use of an industrial fermenter and explain the need to provide suitable conditions in the fermenter, including aseptic precautions, nutrients, optimum temperature and pH, oxygenation, and agitation, for the growth of microorganisms.</li> <li>• Understand how selective breeding can develop plants and animals with</li> </ul>	<p>Year 7 Ecosystems</p> <p>Year 8 Food and nutrition</p> <p>Year 8 Unicellular organisms</p> <p>Year 8 Breathing and respiration</p>	<p>Year 12 – Unit 2 Biodiversity and conservation</p> <p>Year 13 – Unit 4 energy flow, ecosystems, and the environment</p>	<p>PRIDE Prepare for future challenges Developing skills for the future</p>	<p>Conscious thinking about my <b>Actions</b></p> <p>Conscious thinking about my <b>Future</b></p> <p>Conscious thinking about my <b>Country</b></p> <p>Conscious thinking about my <b>Environment</b></p> <p>Conscious thinking about my <b>Health</b></p>
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		<p><b>desired characteristics</b></p> <ul style="list-style-type: none"><li>• Describe how restriction enzymes are used to cut DNA at specific sites and ligase enzymes are used to join pieces of DNA together</li><li>• Explain how plasmids and viruses can act as vectors, which take up pieces of DNA, and then insert this recombinant DNA into other cells</li><li>• Describe how large amounts of human insulin can be manufactured from genetically modified bacteria that are grown in a fermenter</li><li>• Understand how genetically modified plants can be used to improve food production</li><li>• Understand that the term transgenic means the transfer of genetic material from one species to a different species</li><li>• Describe the process of micropropagation (tissue culture) in which explants are grown in vitro</li><li>• Understand how micropropagation can be used to produce</li></ul>				
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		<p><b>commercial quantities of genetically identical plants with desirable characteristics</b></p> <ul style="list-style-type: none"> <li>• <b>Describe the stages in the production of cloned mammals involving the introduction of a diploid nucleus from a mature cell into an enucleated egg cell, illustrated by Dolly the sheep</b></li> <li>• <b>Understand how cloned transgenic animals can be used to produce human Proteins.</b></li> <li>• <b>Understand the methods used to farm large numbers of fish to provide a source of protein, including maintaining water quality, controlling intraspecific and interspecific predation, controlling disease, removing waste products, controlling the quality and frequency of feeding, and selective breeding .</b></li> </ul>				
<b>Revision &amp; Developing Examination Technique</b>	<b>2</b>	<ul style="list-style-type: none"> <li>• <b>Revision &amp; Developing Examination Technique</b></li> </ul>				