

Content listed in purple is for separate biology students only. Content listed in green indicates AQA Required Practical Work. Content listed in orange is HT only.

	Year 10	Year 11
<p><b>Autumn half term 1</b> Sequential knowledge and skills</p>	<p><b>B1 – Cells</b> <b>Cell Structure</b> Cells are the basic unit of all forms of life. In this section we explore how structural differences between types of cells enables them to perform specific functions within the organism. These differences in cells are controlled by genes in the nucleus.</p> <p><b>Cell Division &amp; Stem Cells</b> For an organism to grow, cells must divide by mitosis producing two new identical cells. If cells are isolated at an early stage of growth before they have become too specialised, they can retain their ability to grow into a range of different types of cells. This phenomenon has led to the development of stem cell technology. This is a new branch of medicine that allows doctors to repair damaged organs by growing new tissue from stem cells.</p> <p><b>Required Practical</b> - Using a light microscope <b>Required practical</b> - Effect of antibiotics on bacterial growth Separates Biology <b>Required practical</b> - Osmosis <b>Separate Biology</b> Culturing microorganisms <b>Required practical</b> - Effect of antibiotics on bacterial growth</p>	<p><b>B7 - Ecology</b> 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><b>Required practical</b> - Decay Separates Biology <b>Separate Biology</b> Factors affecting food security Farming techniques Sustainable fisheries + Role of biotechnology</p> <p><b>Genetics</b> 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.</p> <p>An understanding of these processes has allowed scientists to intervene through selective breeding to produce livestock with favored 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 favorable 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><b>Separate Biology</b> Advantages and disadvantages of sexual and asexual reproduction DNA structure Cloning</p>

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Assessment Content And Methods Used To Judge Learning	<p><b>Y10 Autumn Summative Assessment</b> Cells</p> <ul style="list-style-type: none"> <li>• End Of Topic Consolidation Tasks</li> <li>• Formative Assessment</li> <li>• Required Practical Retrieval Tasks</li> <li>• Homework – Exam Style Questions</li> </ul>	<p><b>Y11 Autumn Summative Assessment</b> Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System Human Body – Heart, Human Body – Lungs, Plant Tissue Communicable Disease + Non-Communicable Disease, Bioenergetics, Ecology + Genetics</p> <ul style="list-style-type: none"> <li>• End Of Topic Consolidation Tasks</li> <li>• Formative Assessment</li> <li>• Required Practical Retrieval Tasks</li> <li>• Homework – Exam Style Questions</li> </ul>
Autumn half term 2 Sequential knowledge and skills	<p><b><u>Diffusion, Osmosis &amp; Active Transport</u></b> Substances may move into and out of cells across the cell membranes via diffusion. Water may move across cell membranes via osmosis. Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane. Active transport moves substances from a more dilute solution to a more concentrated solution (against a concentration gradient). This requires energy from respiration. <b><u>Digestive System</u></b> In this section we will learn about the human digestive system which provides the body with nutrients and the respiratory system that provides it with oxygen and removes carbon dioxide. In each case they provide dissolved materials that need to be moved quickly around the body in the blood by the circulatory system. <b>Required practical - Food tests</b> <b>Required practical – Enzymes</b></p>	<p><b><u>Evolution</u></b> 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. Students should be able to describe evolution as 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. The theory of evolution by natural selection states that all species of living things have evolved from simple life forms that first developed more than three billion years ago.  <b><u>Separate Biology</u></b> <a href="#">Theory of evolution</a> <a href="#">Speciation</a></p>
Assessment Content and methods used to judge learning	<p><b>Formative assessment</b> Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System</p> <ul style="list-style-type: none"> <li>• End of topic consolidation tasks</li> <li>• Homework – exam style questions</li> <li>• Peer marked end of topic assessment</li> <li>• Required Practical completion</li> </ul>	<p><b>Formative assessment</b> Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System Human Body – Heart, Human Body – Lungs, Plant Tissue Communicable Disease + Non-Communicable Disease, Bioenergetics, Ecology, Genetics+ Evolution</p> <ul style="list-style-type: none"> <li>• End of topic consolidation tasks</li> <li>• Homework – exam style questions</li> <li>• Peer marked end of topic assessment</li> <li>• Required Practical completion</li> </ul>

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<p><b>Spring half term 3</b> Sequential knowledge and skills</p>	<p><b><u>B2 – Organisation</u></b> <b><u>Plant Tissue</u></b> We will also learn how the plant’s transport system is dependent on environmental conditions to ensure that leaf cells are provided with the water and carbon dioxide that they need for photosynthesis. Students should be able to explain how the structures of plant tissues are related to their functions.</p> <p><b><u>Human Body - Lungs</u></b> Students should know the structure and functioning of the human heart and lungs, including how lungs are adapted for gaseous exchange.</p> <p><b><u>Human Body - Heart</u></b> Damage to any of these systems can be debilitating if not fatal. Although there has been huge progress in surgical techniques, especially with regard to coronary heart disease, many interventions would not be necessary if individuals reduced their risks through improved diet and lifestyle.</p>	<p><b><u>Homeostasis</u></b> 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><b><u>Nervous System</u></b> In this section we will explore the structure and function of the nervous system and how it can bring about fast responses. Students should be able to explain how the structure of the nervous system is adapted to its functions. The nervous system enables humans to react to their surroundings and to coordinate their behaviour.</p> <p><b>Required practical - Reaction time</b></p> <p><b><u>HT Only</u></b> The use of hormones to treat infertility Negative feedback</p>
<p>Assessment Content and methods used to judge learning</p>	<p><b><i>Y10 Spring Summative Assessment</i></b> <i>Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System</i> <i>Human Body – Heart, Human Body – Lungs, Plant Tissue</i></p> <ul style="list-style-type: none"> <li>• <i>End of topic consolidation tasks</i></li> <li>• <i>Formative assessment</i></li> <li>• <i>Required Practical Retrieval Tasks</i></li> <li>• <i>Homework – exam style questions</i></li> </ul>	<p><b><i>Y11 Spring Summative Assessment</i></b> <i>Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System</i> <i>Human Body – Heart, Human Body – Lungs, Plant Tissue Communicable Disease + Non-Communicable Disease, Bioenergetics, Ecology, Genetics+ Evolution, Homeostasis and the Nervous System</i></p> <ul style="list-style-type: none"> <li>• <i>End of topic consolidation tasks</i></li> <li>• <i>Formative assessment</i></li> <li>• <i>Required Practical Retrieval Tasks</i></li> <li>• <i>Homework – exam style questions</i></li> </ul>

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<p><b>Spring half term 4</b> Sequential knowledge and skills</p>	<p><b><u>B3 – Infection and Response</u></b></p> <p><b><u>Communicable Disease</u></b> Pathogens are microorganisms such as viruses and bacteria that cause infectious diseases in animals and plants. They depend on their host to provide the conditions and nutrients that they need to grow and reproduce. They frequently produce toxins that damage tissues and make us feel ill. This section will explore how we can avoid diseases by reducing contact with them, as well as how the body uses barriers against pathogens. Once inside the body our immune system is triggered which is usually strong enough to destroy the pathogen and prevent disease. When at risk from unusual or dangerous diseases our body’s natural system can be enhanced by the use of vaccination. Since the 1940s a range of antibiotics have been developed which have proved successful against a number of lethal diseases caused by bacteria. Unfortunately many groups of bacteria have now become resistant to these antibiotics. The race is now on to develop a new set of antibiotics.</p> <p><b><u>Non-Communicable Disease</u></b> Students should be able to discuss the human and financial cost of these non-communicable diseases to an individual, a local community, a nation or globally. They should also explain the effect of lifestyle factors including diet, alcohol and smoking on the incidence of non-communicable diseases at local, national and global levels.</p> <p><b><u>Separate Biology</u></b> Producing monoclonal antibodies Use of monoclonal antibodies Detection and identification of plant diseases Plant defence responses</p>	<p><b><u>Female Reproductive Hormones</u></b> 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><b><u>Pancreas</u></b> The endocrine system is composed of glands which secrete chemicals called hormones directly into the bloodstream. The blood carries the hormone to a target organ where it produces an effect. Compared to the nervous system the effects are slower but act for longer.</p> <p><b><u>Separate Biology</u></b> The brain The eye Control of body temperature Maintaining water and nitrogen balance in the body Plant hormones- control and coordination Use of plant hormones</p> <p><b><u>Required practical - Germination Separates Biology</u></b></p>

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Assessment Content and methods used to judge learning	<p><b>Formative assessment</b>  <i>Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System</i>  <i>Human Body – Heart, Human Body – Lungs, Plant Tissue Communicable Disease + Non-Communicable Disease.</i></p> <ul style="list-style-type: none"> <li>• End of topic consolidation tasks</li> <li>• Homework – exam style questions</li> <li>• Peer marked end of topic assessment</li> <li>• Required Practical completion</li> </ul>	<p><b>Y11 Spring Formative and Summative Assessments</b>  <i>Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System</i>  <i>Human Body – Heart, Human Body – Lungs, Plant Tissue Communicable Disease + Non-Communicable Disease, Bioenergetics, Ecology, Genetics+ Evolution, Homeostasis and the Nervous System</i></p>
Summer half term 5 Sequential knowledge and skills	<p><b>B4 - Bioenergetics</b>  <u>Respiration</u>  Both animals and plants use this oxygen to oxidise food in a process called aerobic respiration which transfers the energy that the organism needs to perform its functions. Conversely, anaerobic respiration does not require oxygen to transfer energy. During vigorous exercise the human body is unable to supply the cells with sufficient oxygen and it switches to anaerobic respiration. This process will supply energy but also causes the build-up of lactic acid in muscles which causes fatigue.  <u>Photosynthesis</u>  In this section we will explore how plants harness the Sun’s energy in photosynthesis in order to make food. This process liberates oxygen which has built up over millions of years in the Earth’s atmosphere.  <b>Required practical - Photosynthesis</b></p>	<p><b>Revision</b>  End of topic consolidation tasks  Peer marked end of topic assessment  Leveled practical write up  10 Minute Tests  Required Practical review  Review of the specification checklist  Retrieval Practice</p>
Assessment Content and methods used to judge learning	<p><b>Y10 Spring Summative Assessment</b>  <i>Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System</i>  <i>Human Body – Heart, Human Body – Lungs, Plant Tissue Communicable Disease + Non-Communicable Disease + Bioenergetics.</i></p> <ul style="list-style-type: none"> <li>• End of topic consolidation tasks</li> <li>• Formative assessment</li> <li>• Required Practical Retrieval Tasks</li> <li>• Homework – exam style questions</li> </ul>	

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<p>Summer half term 6 Sequential knowledge and skills</p>	<p><b>B7 - Ecosystems</b> <b>Ecology</b> 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. <b>Required practical</b> - Field investigations <b>Separate Biology</b> Impact of the environmental change Trophic levels Pyramids of biomass Transfer of biomass</p>	
<p>Assessment Content and methods used to judge learning Assessment</p>	<p><b>Formative assessment</b> <i>Cells, Diffusion, Osmosis &amp; Active Transport, Digestive System Human Body – Heart, Human Body – Lungs, Plant Tissue Communicable Disease + Non-Communicable Disease, Bioenergetics + Ecology.</i></p> <ul style="list-style-type: none"> <li>• <i>End of topic consolidation tasks</i></li> <li>• <i>Homework – exam style questions</i></li> <li>• <i>Peer marked end of topic assessment</i></li> <li>• <i>Required Practical completion</i></li> </ul>	