



Science Department
Biology Curriculum and Assessment Map

	Half Term 1	Half-Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 11	The Human Nervous System Hormones and Reproduction	DNA and Genetics Variation, Evolution and Genetic Technologies	Evolution and Extinction	Organisms and their environment	Revision for GCSE	

<p>Fundamental Knowledge</p>	<ol style="list-style-type: none"> 1. State the function of the nervous system and name its important components 2. Describe how information passes through the nervous system 3. Describe what happens in a reflex action and why reflex actions are important. 4. Explain how features of the nervous system are adapted to their function, including a reflex arc (inc. all types of neurone and the synapse). 5. Required practical: plan and carry out an investigation into the effect of a factor on human reaction time <ol style="list-style-type: none"> 1. Describe the endocrine system, including the location of the pituitary, pancreas, thyroid, adrenal gland, ovary and testis and the role of hormones 2. State that blood glucose concentration is monitored and controlled by the pancreas 3. Describe the body's response when blood glucose concentration is too high 4. Explain what type 1 and type 2 diabetes are and how they are treated 5. HT ONLY: Describe the body's response when blood glucose concentration is too low 6. HT ONLY: Explain how glucagon interacts with insulin to control blood glucose levels in the body 7. Describe what happens at puberty in males and females, inc. knowledge of reproductive hormones 	<ol style="list-style-type: none"> 1. Describe features of sexual and asexual reproduction 2. Describe what happens during meiosis and compare to mitosis 3. Describe what happens at fertilisation 4. Describe the structure of DNA and its role in storing genetic information inside the cell 5. Explain the term 'genome' and the importance of the human genome (specific examples from spec only) 6. Describe how characteristics are controlled by one or more genes, including examples 7. Explain important genetic terms: gamete, chromosome, gene, allele, genotype, phenotype, dominant, recessive, homozygous and heterozygous 8. Explain and use Punnet square diagrams, genetic crosses and family trees 9. HT ONLY: Construct Punnet square diagrams to predict the outcomes of a monohybrid cross 10. Describe cystic fibrosis and polydactyly as examples of inherited disorders 11. Evaluate social, economic and ethical issues concerning embryo screening when given appropriate information 12. Describe how the chromosomes are arranged in human body cells, including the function of the sex chromosomes 13. Explain how sex is determined and carry out a genetic cross to show sex inheritance 	<ol style="list-style-type: none"> 1. Describe some sources of evidence for evolution. 2. Describe what fossils are. 3. Describe three ways in which fossils may be formed. 4. Explain why there are few traces of the early life forms, and the consequences of this in terms of our understanding of how life began. 5. Describe what we can learn from fossils. 6. Explain what is meant by 'extinction' and describe some of the causes of extinction. 7. Explain why bacteria can evolve rapidly. 8. Describe how antibiotic-resistant strains of bacteria can arise and spread. 9. Give a named example of an antibiotic-resistant strain of bacteria. 10. Describe how the rate of development of antibiotic-resistant bacteria can be reduced and controlled. 11. Describe how organisms are classified in the Linnaean system. 	<ol style="list-style-type: none"> 1. State what an ecosystem is, including different levels of organisation in ecosystems 2. Explain the terms 'interdependence' and 'stable community'. 3. Name the abiotic and biotic factors that affect communities. 4. Explain how a change in an abiotic or biotic factor might affect a community 5. Represent the feeding relationships within a community using a food chain and describe these relationships 6. Explain how and why ecologists use quadrats and transects 7. Required practical: measure the population size of a common species in a habitat. Use sampling techniques to investigate the effect of a factor on the distribution of this species. 8. Describe which resources animals and plants compete for, and why they do this. 9. Describe structural, behavioural, and functional adaptations of organisms. 	
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Learning Checkpoint Tasks	1. Structure of the Nervous System 2. Reflex actions 1. Blood glucose and diabetes 2. Hormones in the Menstrual Cycle	1. Reproduction and Meiosis 2. Inheritance 1. Variation and Evolution	1. Fossils and Extinction 2. Classification 1. Genetic Technologies	2. Ecosystems 3. Biodiversity 4. Water and Carbon cycles	
Mock Exam (if applicable)	Paper 1 Mock Exam		Paper 2 Mock Exam		
Interleaved Knowledge	<p>Previously at KS3 pupils will have learnt:</p> <ul style="list-style-type: none"> • How cells, tissues, organs and organ systems are related. • That cells divide • That your nervous system helps to coordinate your actions <p>From previous topics, students should be able to recall:</p> <ul style="list-style-type: none"> • Enzyme action in B3.2 <i>The human digestive system</i> and B3.4 <i>Catalysts and enzymes</i> • Nerve cells in B1.4 <i>Specialisation in animal cells</i>. • B2.3 <i>Stem cells</i> • The effect of lifestyle on type 2 diabetes in B7.4 <i>Diet, exercise, and disease</i>. • Chromosomes and mitosis and the cell cycle in B2 <i>Cell division</i> 		<p>From KS3 students will have learnt:</p> <ul style="list-style-type: none"> • That organisms change over time (evolution) • That Charles Darwin came up with a theory to explain this • About how DNA contains instructions for the characteristics of organisms. <p>From previous topics, students should be able to:</p> <ul style="list-style-type: none"> • Link environmental variation with the effect of alcohol on a fetus in B7.5 <i>Alcohol and other carcinogens</i>. • Recall sexual reproduction and meiosis in B13.2 <i>Cell division in sexual reproduction</i>. • B14.2 <i>Evolution by natural selection</i>. • Link antibiotic resistance with B6 <i>Preventing and treating disease</i> on antibiotics and the 	<p>Previously at KS2/KS3 students will have learnt:</p> <ul style="list-style-type: none"> • that environments can change and that this can sometimes pose dangers to living things. • How almost all life on Earth depends on photosynthesis in plants and algae • How organisms affect and are affected by their environment <p>In this chapter students have studied how feeding relationships are represented in food chains. They should understand the importance of photosynthesis in feeding relationships, linking with work in B8 <i>Photosynthesis</i>. Students have looked at mineral cycling and the microbes involved. They</p>	

		<p>discovery and development of drugs.</p> <ul style="list-style-type: none">• Classifying organisms in B1.3 <i>Eukaryotic and prokaryotic cells</i>.• Link with work on diabetes treatment using human insulin in B11.3 <i>Treating diabetes</i>, and with the treatment of cystic fibrosis in B13.9 <i>Inherited disorders</i>	<p>should understand how materials are recycled through the abiotic and biotic components of an ecosystem, and the importance of decay. They should link this with the main chemicals that make up cells in B1.2 <i>Animal and plant cells</i>, respiration in B9 <i>Respiration</i>, and transpiration in B4.8 <i>Evaporation and transpiration</i>. Students should be able to outline the processes of deforestation and peat destruction. They should link this with how materials are cycled in B17.3 <i>The carbon cycle</i>.</p>	
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