

Year 10 Biology							Relation
Term	1	2	3	4	5	6	
Topic Title	Start: B2.1 - Scaling up: supplying the cell (B2.1.1-B2.1.4)	Finish: B2.1 - Scaling up: supplying the cell Start: B2.2 - Challenges of size (B2.1.5-B2.2.3)	Finish: B2.2 - Challenges of size (B2.2.4-B2.2.6)	B3.1 Nervous system	B3.2 Endocrine System (B3.2.1-B3.2.5)	B3.3 Homeostasis: Maintaining Internal Environment	B4.1 Ecosystems
Rationale	To understand how substances move across cell membranes & How cell tissues arises in so many forms.	To understand how surface area to volume ratio affects living organisms & how they have adapted gas exchange surfaces & internal transport systems to cope with multicellular bodies.	To understand how surface area to volume ratio affects living organisms & how they have adapted gas exchange surfaces & internal transport systems to cope with multicellular bodies.	Cells, tissues and organ systems have been introduced in Y9 B2.2. The topic address moving into a specific organ system - Nervous system and other topics looking at another organ system - Endocrine system. How the structure & function of the eye, ear, nose, mouth and skin are covered.	Hormones, negative feedback and tertiary structure of proteins.	Students have applied cell theory in Y9 and have looked at the interaction of organ systems in B2.2 and 1.3.2. Now students will explore the interaction of these systems during homeostasis.	This is a relation topic as well as taught to different groups at different times throughout Y10 - This is because it is not related to knowledge from other Y10 topics
Prior knowledge	Y7 work on movement of substances across cells	Y7 Cells: Y7 gas exchange & breathing topic.	Y7 Cells: Y7 gas exchange	Students have studied cells (plants, animals, and single-celled organisms). They can distinguish between these types of cell based on their cell walls, nucleus, and cell membrane. They can also distinguish between animal and plant cells. They should understand the structure and function of the cell membrane, and be able to describe the main cell structures, including the nucleus, cell membrane, cytoplasm, and mitochondria. They should also understand the structure and function of the cell wall. They should be able to explain the role of the cell wall. They should be able to explain the role of the cell wall in plant cells. They should be able to explain the role of the cell wall in plant cells. They should be able to explain the role of the cell wall in plant cells.	Students will have an understanding of the different processes within the body from B1.3 and B2.1, mainly respiration and the movement of substances through osmosis, diffusion and active transport. Students have also explored the structure and organization of different organ systems - see B3.1.2. Students will have studied Homeostasis in Y7 science.	Students will have an understanding of the different processes within the body from B1.3 and B2.1, mainly respiration and the movement of substances through osmosis, diffusion and active transport. Students have also explored the structure and organization of different organ systems - see B3.1.2. Students will have studied Homeostasis in Y7 science.	Students have previously learnt about food webs and chains and the distribution of these including bioaccumulation in Year 8 Term 3. Therefore it is expected that students have a basic understanding of some of the interactions which take place within an ecosystem, including production. Students have covered aspects of the water cycle and carbon cycle in Geography, in Year 9, a basic understanding of stress and processes is expected.
Key knowledge/skills development	To be able to understand how molecules pass across cell surface membranes alongside the factors affecting this. To understand how cells arise from other cells and develop into the range of cells with specialised functions.	To appreciate the concept of surface area to volume ratio in regard to maximum cell size. To recognize multicellular organisms need for internal transport systems & gas exchange surfaces and factors need for them to work efficiently in animals.	To recognize multicellular organisms need for internal transport systems & gas exchange surfaces and factors need for them to work efficiently in plants.	In this chapter, students have studied the structure and function of the human nervous system. They should be familiar with the structure of sensory and motor neurones. Students should link the work on diffusion in B2.1. Supplying the cell, which covered the differentiation of cells such as nerve cells. They should understand the pathway of a reflex arc and be able to give examples of coronary reflexes. They should be able to use the term electrical synapse when describing the nervous system, and should understand that receptors detect a change in stimulus.	Knowledge is required for the positions of major glands and what hormones are and how they function. Students should know about the menstrual cycle and its hormones. They should be able to state the four main hormones involved in the response they relate. Higher tier students should be able to interpret a graph of changing hormone levels through the cycle, and be able to explain how the hormones control the menstrual cycle. They should be able to describe the relationship between the menstrual cycle hormones in terms of negative feedback processes. The role of the pituitary gland in the brain in B2.2. Higher tier students should be able to explain the process of negative feedback, applied to thyroxine and adrenaline.	In this chapter, students begin their study of homeostasis with the control of body temperature. They should be able to regulate body temperature, and explain the response of the body to a change in temperature. They should understand that in the blood vessels leading to the skin, the temperature receptors respond to a change in temperature. Students should understand how blood vessel constriction is controlled, causing the flow of blood and, for higher tier students, dilation. Students should distinguish between Type 1 and Type 2 diabetes. In studying the control of insulin released and why this is important, students should be able to outline what occurs and how it is produced. They should understand that when concentrations of glucose in the blood are high, and the pancreas releases insulin to allow a number of processes to occur in the liver. The insulin then allows the glucose to be taken up by the cells. They should be able to describe the structure of the kidney and of the nephron. They should understand how the kidney filters the blood, and the many substances such as glucose are reabsorbed in selective reabsorption. They should be able to use the term osmosis, and active transport in B2.1. Supplying the cell. Higher tier students should be familiar with the concept of negative feedback. In the vertebrate control of blood water content, they should be able to explain the process of negative feedback, applied to thyroxine and adrenaline.	In this chapter, students have studied how ecosystems are organized and should be able to use the terms autotrophs, heterotrophs, producers, consumers, and decomposers. They should understand that biomass is transferred through a food chain and is a measure of energy flow. They should be able to use the term energy pyramid to describe energy flow in an ecosystem. They should understand that in the blood vessels leading to the skin, the temperature receptors respond to a change in temperature. Students should understand how blood vessel constriction is controlled, causing the flow of blood and, for higher tier students, dilation. Students should distinguish between Type 1 and Type 2 diabetes. In studying the control of insulin released and why this is important, students should be able to outline what occurs and how it is produced. They should understand that when concentrations of glucose in the blood are high, and the pancreas releases insulin to allow a number of processes to occur in the liver. The insulin then allows the glucose to be taken up by the cells. They should be able to describe the structure of the kidney and of the nephron. They should understand how the kidney filters the blood, and the many substances such as glucose are reabsorbed in selective reabsorption. They should be able to use the term osmosis, and active transport in B2.1. Supplying the cell. Higher tier students should be familiar with the concept of negative feedback. In the vertebrate control of blood water content, they should be able to explain the process of negative feedback, applied to thyroxine and adrenaline.
National Curriculum/Specification links	B.2.1.1-B2.1.6	(B2.1.5-B2.2.3)	(B2.2.4-B2.2.6)	B3.1-B3.1.2 (B3.1-3.1H)	B3.2-1-B3.2.5	Homeostasis (B3.3.2-B3.3.5)	B4.1.1 - B4.1.8
Additional Learning Opportunities	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practise of six mark questions and terminology in Going for Gold or Going Forward type tasks
Additional Numeracy Objectives	Numeric concentration concept for osmosis-water potential.	Heart rate in animals. Breathing rate in animals.	Factors affecting transpiration rates in plants.				Calculate energy flow / loss through trophic levels
STEM (Working Scientifically course)	PAG 2 Sampling techniques; PAG 3 Enzymes	PAG 4 Photosynthesis; PAG booklet 'action's	PAG 1 Electrolysis; PAG 2 Distillation	PAG 5 Rate of reaction; PAG booklet 'action's'	PAG 1 Density materials; PAG 5 Energy SHC	PAG 2 Forces; PAG 4 Waves	N/A
Close curricular links	Y7 Cells; Y7 gas exchange & breathing topic; P.E exercise effects on heart rate.	Y7 Cells; Y7 gas exchange & breathing topic; P.E exercise effects on heart rate.	Gas exchange Year 7 Biology Term 2	See previous			Year 8 Biology Term 3; Year 7 Geography Term 5
Key vocabulary	Diffusion, Osmosis, water potential, concentration, dilute, Active transport, mitochondria, mitosis, chromosome, differentiation	Lungs, Diaphragm, Trachea, Bronchioles, Alveoli, gas exchange, O <sub>2</sub> , Diffusion gradient, artery, vein, capillary, heart, atrium, ventricle, aorta, vein, cone, afferent.	Xylem, phloem, transpiration, active transport, osmosis	Receptor, stimulus, CNS, PNS, Brain, Reflex, Sensory Neurone, Motor Neurone, Impulse.	Receptor, stimulus, CNS, PNS, Brain, Glandular, Medulla, MN, hormones, Menstrual Cycle, Sensory Neurone, Motor Neurone, Impulse, Refraction	Homeostasis, Kidney, Selective reabsorption, AB <sub>2</sub> loop of Henle, Glagon, Glucose, Potassium, Glucose, Water Potential, Osmosis, Liver, Evaporation, Thermoregulation, Thermoregulation	Producer, consumer, herbivore, carnivore, omnivore, detritivore, energy, predation, prey, mutualism, parasitism, abiotic, biotic, competition, carbon cycle

Year 10 Biology	1	2	3	4	5	6	Revision	
Topic Title	B3 1 Nervous system up to eye	Brain & nerve damage	B3 2 The Endocrine System	Finish B3.2 The Endocrine System Part 1	Start B3.3 Maintaining Internal Environment	Finish B3.3 Maintaining Internal Environment	B4 1 Ecosystems	
Rationale	Cells, tissues and organs systems have been discussed in B10.10. The topic covers concepts of specific organ systems. Nervous system and its response with lighting or another organ system. Endocrine system, structure and function of endocrine system, effects of hormones on target organs & feedback systems.	The structure and function of the brain, sense and brain (MSB) and its disorders.	Hormones, negative feedback and feedback in humans	Phytohormones and their uses in industry	Students have explored cell division in 10 and have looked at the relationship of organ systems in B2.1 and B3.1. Now students will explore the interaction of these systems in the body.	Students have explored cell division in 10 and have looked at the relationship of organ systems in B2.1 and B3.1. Now students will explore the interaction of these systems in the body.	Students have explored cell division in 10 and have looked at the relationship of organ systems in B2.1 and B3.1. Now students will explore the interaction of these systems in the body.	
Prior knowledge	Students have studied cells, tissues, organs, and organ systems. They can distinguish between these types of cells and tissues and are able to describe the structure and function of these cells, tissues, organs, and organ systems. They can distinguish between these types of cells and tissues and are able to describe the structure and function of these cells, tissues, organs, and organ systems.		Y7 Human Reproduction	These are not covered previously and so students will be able to explore these topics in more detail. They will be able to describe the structure and function of these cells, tissues, organs, and organ systems.	Students will have an understanding of the different processes within the body from B2.1 and B3.1. They will be able to describe the structure and function of these cells, tissues, organs, and organ systems.	Students will have an understanding of the different processes within the body from B2.1 and B3.1. They will be able to describe the structure and function of these cells, tissues, organs, and organ systems.	Students have explored cell division in 10 and have looked at the relationship of organ systems in B2.1 and B3.1. Now students will explore the interaction of these systems in the body.	
Key knowledge/skills development	In this chapter, students have studied the structure and function of the human nervous system. They should be familiar with the structure of sensory and motor neurones. Students should be able to work on diffusion in B2.1. Supporting the cell, which covered the differentiation of cells such as nerve cells. They should understand the pathway of a reflex arc and be able to give examples of common reflexes. They should be able to use the term electrical impulse when describing the nervous system, and should understand that receptors detect a change in stimulus. Students should be able to describe the structure and function of the human eye. Acting as if students should understand the process of accommodation, including the contraction of the ciliary muscles. They should understand that light enters the eye and is detected by photoreceptors in the retina. Forming an image which is interpreted by the brain. Students should be familiar with common defects of the eye including colour blindness, short sight, and long sight, and how these conditions can be treated.	In this chapter, students should be able to describe the structure and function of the human nervous system. They should be familiar with the structure of sensory and motor neurones. Students should be able to work on diffusion in B2.1. Supporting the cell, which covered the differentiation of cells such as nerve cells. They should understand the pathway of a reflex arc and be able to give examples of common reflexes. They should be able to use the term electrical impulse when describing the nervous system, and should understand that receptors detect a change in stimulus. Students should be able to describe the structure and function of the human eye. Acting as if students should understand the process of accommodation, including the contraction of the ciliary muscles. 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Triple 11	Start B3.1 - Nervous system (B3.1.1-B3.1.3)	Finish B3.1 - Nervous system (B3.1.4-B3.1.5)	Start B3.2 - Endocrine system (B3.2.1-B3.2.5)	Finish B3.2 - Endocrine system (B3.2.6-B3.2.7)	Homeostasis (B3.3.1-B3.3.3)	Homeostasis (B3.3.4-B3.3.5)	B4 1.1 - B4 1.8	
National Curriculum/Specifics/Other links	B3.1.1 - B3.1.3	B3.1.4 - B3.1.5	B3.2.1 - B3.2.5	B3.2.1 - B3.2.7	B3.3.1 - B3.3.3	B3.3.4 - B3.3.5	B4 1.1 - B4 1.8	
Additional Literacy Opportunities	Literacy task Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Memorisation task Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Memorisation task Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	
Additional Numeracy Opportunities	Data on nerve transmission speeds may be looked at.		Graphical data on menstrual cycle.		Graphical questions on Blood sugar levels.		Calculate energy flow/ loss through trophic levels	
STEM (Working Scientifically context)	PAG 3 Sampling Techniques, PAG 4 Enzymes	PAG 6 Photosynthesis, PAG 6 Physiology of Reproduction	PAG 2 Electrolysis, PAG 4 Distillation	PAG 1 Reactivity Trends, PAG 8 Rates of Reaction, PAG 5 Secondary Structure	PAG 1 Density materials, PAG 5 Energy SNC	PAG 2 Forces, PAG 4 Waves		
Cross curricular links	Coordination in P.E, Year 7 Physics T3.	Y7 organisation of organ systems.	Y7 Reproduction topic	CHM development 10Y111	Links to P.E, health & blood sugar.		Year 8 Biology Term 3, Year 7 Geography Term 3, Year 9 Geography Term 5	
Key vocabulary	Receptor, stimulus, CNS, PNS, Brain, Reflex, Cerebrum, Medulla, MRS, hormones, Menstrual Cycle, Sensory Neurone, Motor Neurone, Impulse, Reflexion	See previous	Hormones, Kidney, Selective reabsorption, ADH, loop of Henle, Glucagon, Glucose, Pancreas, Cholesterol, Water Potential, Osmosis, Liver, Excretion, Thermolabile, Thermoregulation	See previous	See previous	See previous	Producer, consumer, herbivore, carnivore, omnivore, biomass, energy pyramid, prey, mutualism, parasitism, abiotic, biotic, condition, carbon cycle.	

Year 11 Biology	1	2	3	4	5	6	7	8	9	10	11	12
Topic Title	Start: B6.1 - Monitoring and maintaining the environment	Finish: B6.1 & start B6.2 - Feeding the human race (T)	Finish: B6.2 - Feeding the human race			Revision and PAGS				Topic / Combined Science Position		Exam Source: Revision / lessons
Rationale	This topic uses the content learnt in Y10. In particular B4.1 to look at the importance of Biodiversity. Biodiversity forms the basis for B6.2 started in the next term	Finish: B6.1 & start B6.2 - Feeding the human race (T)	Finish: B6.2 - Feeding the human race			Revision and PAGS				B6.1 - Monitoring and maintaining health		Revision - As directed by main teacher
Prior knowledge	This topic uses the content learnt in Y10. In particular B4.1 to look at the importance of Biodiversity. Biodiversity forms the basis for B6.2 started in the next term	Students have covered aspects of the topic throughout Y10 Geography. They should also be able link this with those about producers in B1.4 Photosynthesis, concepts of interdependence and biotic and abiotic factors in B4.1 Ecosystems, and how genetic variation in a population is important for the survival of a species in B5.1 Inheritance and B5.2 Natural selection and evolution.	They should link the work with the conditions needed by plants for photosynthesis in B1.4 Photosynthesis and with interactions between species in a food web in B4.1 Ecosystems. Students should be familiar with selective breeding as an example of artificial selection, be able to give examples, and explain the disadvantages of this process. They should link this with the idea of variability between species in B5.1 Inheritance and the natural selection of characteristics in B5.2 Natural selection and evolution. Higher tier students should be able to describe the steps in the process of genetic engineering, linking with the organisation of DNA and enzyme action in B1.3 What happens in cells? and with human insulin for the treatment of diabetes in B3.3 Maintaining internal environments.			This is a review of all content covered at KS4						This is a review of all content covered at KS4
Key knowledge/skills development	In this chapter students have studied sampling techniques. They should be able to explain why a sample needs to be taken and how to take a random sample. They should be familiar with several methods to sample small animals, and with the use of identification keys. Students should be able to use capture-recapture methods to estimate an animal population size. Use of quadrats to sample plants, and understand the difference between random sampling and non-random sampling. Students have studied food chains and food webs and understand energy flow. Students have studied food pyramids and should understand any differences in response. They should link this with those about producers in B1.4 Photosynthesis, concepts of interdependence and biotic and abiotic factors in B4.1 Ecosystems, and how genetic variation in a population is important for the survival of a species in B5.1 Inheritance and B5.2 Natural selection and evolution. Students should have studied abiotic/biotic, agriculture, hunting, fishing and pollution sources of biodiversity reduction. Students should be able to identify ways to manage biodiversity and to be involved. They should be able to identify biodiversity and the use of biodiversity in food systems, as well as the advantages and disadvantages of each. Students should understand the importance of biodiversity in food systems, as well as the advantages and disadvantages of each. Students should understand the importance of biodiversity in food systems, as well as the advantages and disadvantages of each. Students should understand the importance of biodiversity in food systems, as well as the advantages and disadvantages of each.	In this chapter students have studied sampling techniques. They should be able to explain why a sample needs to be taken and how to take a random sample. They should be familiar with several methods to sample small animals, and with the use of identification keys. Students should be able to use capture-recapture methods to estimate an animal population size. Use of quadrats to sample plants, and understand the difference between random sampling and non-random sampling. Students have studied food chains and food webs and understand energy flow. Students have studied food pyramids and should understand any differences in response. They should link this with those about producers in B1.4 Photosynthesis, concepts of interdependence and biotic and abiotic factors in B4.1 Ecosystems, and how genetic variation in a population is important for the survival of a species in B5.1 Inheritance and B5.2 Natural selection and evolution. Students should have studied abiotic/biotic, agriculture, hunting, fishing and pollution as causes of biodiversity reduction. Students should be able to identify ways to manage biodiversity and to be involved. They should be able to identify biodiversity and the use of biodiversity in food systems, as well as the advantages and disadvantages of each. Students should understand the importance of biodiversity in food systems, as well as the advantages and disadvantages of each.	In this chapter students have studied food security and the factors that affect it. They should be able to describe ways to increase food production including the use of improved farming and genetic engineering. They should be familiar with sustainable food production, farm farming, and the use of biotechnology. They should be able to link this with the conditions needed by plants for photosynthesis in B1.4 Photosynthesis, and with interactions between species in a food web in B4.1 Ecosystems. Students should be familiar with selective breeding as an example of artificial selection, be able to give examples, and explain the disadvantages of this process. They should link this with the idea of variability between species in B5.1 Inheritance and the natural selection of characteristics in B5.2 Natural selection and evolution. Higher tier students should be able to describe the steps in the process of genetic engineering, linking with the organisation of DNA and enzyme action in B1.3 What happens in cells? and with human insulin for the treatment of diabetes in B3.3 Maintaining internal environments.			Review of all key content, exam practice and technique, practice of analytical skills. Review of key terminology and their use.						This is a review of all content covered at KS4
National Curriculum Specification	B6.1.1 - B6.1.5	B6.1.6-B6.2.3	B6.2.3-B6.2.6			N/A				B6.3.1 - B6.3.18		This is a review of all content covered at KS4
Biol Teacher 1	Start: B6.1 - Monitoring and maintaining the environment, (B6.1.1-B6.1.2)	Finish: B6.1 - Monitoring and maintaining the environment, Start: B6.2 - Feeding the human race (B6.1.3-B6.2.3)	Finish: B6.2 - Feeding the human race; (B6.2.4-B6.2.6); Start revision			Revision + PAGS						
Biol Teacher 2	Start: B6.3.1 - Monitoring and maintaining health; (B6.3.1-B6.3.4)	Continue B6.3.1 - Monitoring and maintaining health (B6.3.5-B6.3.11)	Finish: B6.3.1 - Monitoring and maintaining health (B6.3.12-B6.3.13)			B6.3.2 - Non-Communicable Diseases (B6.3.14-B6.3.18)						
Additional Literacy Opportunities	Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks	Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks			Use of keyword learning and practice of six mark questions and terminology in Going for Gold or Going Forward type tasks				Gen Theory		Using Center Literacy tasks
Additional Numeracy Opportunities	Calculate Lincoln Index & Quadrating	Calculate Lincoln Index & Quadrating								The Dordy Barbecue Mystery		
Cross curricular links	Geography Y8 T2, Y10 - used across the year (sustainability) and Y11 T1/2)	Geography Y8 T2, Y10 - used across the year (sustainability) and Y11 T1/2)	Geography Y8 T2, Y10 - used across the year (sustainability) and Y11 T1/2)			N/A						This is a review of all content covered at KS4
Key vocabulary	Sampling, quadrats, bias, biodiversity, pollution, herbicides, pesticides.	Food security, population, quality/quantity, biotechnology, genetically modified, selective breeding, traits	Food security, population, quality/quantity, biotechnology, genetically modified, selective breeding, traits			N/A				Disease, pathogen, antibodies, antigens, lymphocyte, phagocyte, vaccine, monoclonal, communicable, non-communicable, aseptic, cardiovascular		This is a review of all content covered at KS4