

Curriculum Map Year 10 Separate Science - Biology

Topic Name	Term	Skills developed with link to NC Subject content	Reflection on previous link in the curriculum	Progress to future link in the curriculum
Cell biology	<i>Autumn HT1</i>	<ul style="list-style-type: none"> Eukaryotic and prokaryotic cell structure and function of organelles. Microscopy and observing cells, calculating magnification. Mitosis and cell cycle. Cell specialisation and differentiation. Cancer Embryonic and adult stem cells and their uses. 	<p>Year 7: Cells</p> <ul style="list-style-type: none"> What are cells and cell structure Using microscopes safely What are specialised cells and why do we need that for a multicellular organism? Diffusion and how cells get what they need. Organisation of cells, the digestive system. <p>Year 9: Cells</p> <ul style="list-style-type: none"> Mitosis and cell cycle. Cancer Embryonic and adult stem cells and their uses. 	<p>Year 12: Cells</p> <ul style="list-style-type: none"> Structure of eukaryotic, prokaryotic cells and viruses. Methods of studying cells, including optical and electron microscopes. Cell fractionation and ultracentrifugation for TEM use. Calculating magnification, including use of graticules. Stages of mitosis. (meiosis is sometimes also covered here) Stages of binary fission.
Photosynthesis	<i>Autumn HT2</i>	<ul style="list-style-type: none"> Leaf structure and adaptations photosynthesis equation Limiting factors of photosynthesis Uses of glucose by plants Increasing photosynthesis Pondweed required practical Transpiration Translocation 	<p>Year 8: Photosynthesis</p> <ul style="list-style-type: none"> Structure of a leaf and a leaf cell Different types of leaf (adaptations) Photosynthesis reaction and associated investigation Limiting factors of photosynthesis Stomata role and associated investigation Transpiration Plant diseases and deficiency 	<p>Year 12: Photosynthesis</p> <ul style="list-style-type: none"> Chloroplast structure and function. Light-dependent and light-independent reactions. Coenzymes. Limiting factors of photosynthesis. Varieties of chlorophyll. Photosynthesis experiments.
Mass transport systems and Digestive system	<i>Spring HT3</i>	<ul style="list-style-type: none"> Need for mass transport, sa:vol ratios Circulatory system, including heart, cardiac cycle blood and heart disease. Ventilatory system. Structure of lungs and gas exchange adaptations. Digestive system adaptations 	<p>Year 7: Digestive system</p> <ul style="list-style-type: none"> Organisation of cells, the digestive system. Healthy diet and food groups. 	<p>Year 12: Circulatory and ventilatory systems</p> <ul style="list-style-type: none"> Calculating surface area to volume ratio and it's impact upon exchange. Gas exchange in unicellular organisms, mammals, fish, insects and plants. Adaptations to limit water loss in xerophytic plants and insects. Human gas exchange system and effects of disease upon gas exchange. Mechanism of ventilation in humans, fish and insects.
Infection and response	<i>Spring HT4</i>	<ul style="list-style-type: none"> Infectious diseases and mechanisms of transmission Bacterial, viral and fungal diseases and malaria Defence against disease Immunity and vaccination Developing new medicines and drugs Growing microbes safely Antibiotics and antibiotic resistance 	<p>Year 8: Ecology, effect of plant diseases</p> <ul style="list-style-type: none"> Adaptations and classification food chains and webs Role of insects in pollination and food security Interdependence The carbon cycle 	<p>Year 12: Immunity and infection topic</p> <ul style="list-style-type: none"> Immunity- cell recognition, non-specific and specific immune responses. Primary and secondary responses, vaccines, active and passive immunity.

		<ul style="list-style-type: none"> ● Monoclonal antibodies and their uses 	<ul style="list-style-type: none"> ● Effects of diseases and toxins on food webs ● Effect of modern farming methods on diversity ● The future of food production in a growing population world. 	<ul style="list-style-type: none"> ● HIV recognition, structure, symptoms and treatment. ● Monoclonal antibody production and uses in medicine and industry.
Nervous system	<i>Summer HT5</i>	<ul style="list-style-type: none"> ● Central and peripheral nervous system ● conscious and reflex responses ● Reaction times experiment ● Structure of the brain and imaging the brain ● the eye, long and short sight. 		Year 12: Nervous system <ul style="list-style-type: none"> ● Taxis and kinesis and tropisms. ● Receptors- Pacinian corpuscles, rods and cones. ● Action potentials, factors affecting speed of transmission. ● Synapses, summation, drugs at the synapse.
Revision for summer exams	<i>Summer HT5</i>	Recap and reflection on content learnt during the year Exam question focus Application question focus Mathematical skills focus Scientific skills focus		
Hormones and Homeostasis	<i>Summer HT6</i>	<ul style="list-style-type: none"> ● Endocrine system and hormones ● Negative feedback ● Glucose homeostasis ● Temperature homeostasis ● Water homeostasis ● Kidney dialysis and transplants. ● Plant hormones ● Menstrual cycle ● Fertility, contraception and IVF 	Year 5: Animals including humans <ul style="list-style-type: none"> ● Changes from birth, including puberty. 	Year 13: Homeostasis <ul style="list-style-type: none"> ● Negative and positive feedback in homeostasis. ● Blood glucose homeostasis, role of insulin, glucagon and adrenaline. ● Diabetes and use of colorimetry to test glucose levels. ● Kidney structure and function ● Water homeostasis.