Curriculum Map Year 10 Trilogy 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	*Autumn HT1*	● 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.	Year 7 Cells: ● 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. Year 9 Cells: ● Mitosis and cell cycle. ● Cancer ● Embryonic and adult stem cells and their uses.	Year 12 cells: ● 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	*Autumn HT2*	● Leaf structure and adaptations ● photosynthesis equation ● Limiting factors of photosynthesis ● Uses of glucose by plants ● Increasing photosynthesis ● Pondweed required practical ● Transpiration ● Translocation	Year 8 photosynthesis ● 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	Year 12 photosynthesis ● 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	*Spring HT3*	● 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	Year 7 digestive system ● Organisation of cells, the digestive system. ● Healthy diet and food groups.	Year 12 circulatory and ventilatory systems ● Calculating surface area to volume ratio and its 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	*Spring HT4*	● Infectious diseases and mechanisms of transmission ● Bacterial, viral and fungal diseases and malaria ● Defence against disease ● Immunity and vaccination ● Developing new medicines and drugs ● Antibiotics and antibiotic resistance	Year 8 ecology, effect of plant diseases ● Adaptations and classification ● food chains and webs ● Role of insects in pollination and food security ● Interdependence	Year 12 immunity and infection topic ● Immunity- cell recognition, non-specific and specific immune responses. Primary and secondary responses, vaccines, active and passive immunity.

			● The carbon cycle ● 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.	● HIV recognition, structure, symptoms and treatment. ● Monoclonal antibody production and uses in medicine and industry.
Nervous system	*Summer HT5*	● Central and peripheral nervous system ● conscious and reflex responses ● Reaction times experiment		Year 12 nervous system ● 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	*Summer HT5*	Recap and reflection on content learnt during the year Exam question focus Application question focus Mathematical skills focus Scientific skills focus		
Hormones and Homeostasis	*Summer HT6*	● Endocrine system and hormones ● Negative feedback ● Glucose homeostasis ● Temperature homeostasis brief overview ● Water homeostasis brief overview ● Plant hormones ● Menstrual cycle ● Fertility, contraception and IVF	Year 5: Animals including humans ● Changes from birth, including puberty.	Year 13 homeostasis ● Negative and positive feedback in homeostasis. ● Blood glucose homeostasis, role of insulin, glucagon and adrenaline. ● Diabetes and use of colorimetry to test glucose levels.