Year 10: Separate Biology

Curriculum Intent: Year 10 Biology tackles more complex ideas and concepts in the subject. It builds on the key knowledge from years 7,8 and 9 to link together all the areas of the subject. The learning journey goes from the microscopic; looking at cell level systems and processes within cells such as mitosis, through organism and community level systems, to larger scale global issues facing the world of biology. Procedural knowledge and practical skills are developed further, building on experience with microscopy, osmosis and active transport experiments and sampling. The curriculum in year 10 aims to extend and deepen the understanding of Biology at GCSE

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Key ideas and Sequence of Learning	**Module B1- Cell-level systems** • DNA • Transcription and translation . **Module 3 – Organism level systems** • Nervous system • Reflexes • The Eye • The brain • Nervous system damage • Hormones and negative feedback • Menstrual cycle	**Module 3 – Organism level systems** • Menstrual cycle • Controlling reproduction • Using hormones to treat infertility • Plant hormones • Controlling body temperature • Controlling Blood Sugar levels • Maintain water balance.	**Module 3 – Organism level systems** • Kidney • Responding to osmotic challenges **Module B4 – Community level systems** • Revisit ecosystems • Pyramids of biomass • Efficiency of biomass transfer • Nutrient cycles • Decomposition	**Module B4 – Community level systems** • Decomposition **Module B5 – Genetics and inheritance** • Revisit genetics • History of genetics **Module B6 – Global Challenges** • Sampling techniques Students will revise and prepare for their Pre Public examinations	Students sit their EoY exams. Students will complete practical investigations. Students will review their PPE exam papers. **Module B6 – Global Challenges** • Sampling techniques • Loss of Biodiversity • Increasing Biodiversity • Maintaining biodiversity • Monitoring Biodiversity • Food security • Feeding the world	**Module B6 – Global Challenges** • Selective Breeding • Genetic engineering • Health and disease • Communicable diseases • Plant diseases and defences • Body and body defences • Monoclonal Antibodies

Key Questions	1. How does DNA look like and what is the structure of DNA? 2. What happens during Transcription and Translation? 3. What is the role of the nervous system 4. What is inside the eye and how are images formed and how is vision corrected? 5. What is colour blindness? 6. What is the structure and the function of the brain? 7. How can we investigate brain function? 8. What is nervous system damage, what its effects and why is it difficult to repair? 9. What is the role of hormones in reproduction.	1. What is the role of hormones in reproduction. 2. How can hormones be used to treat infertility and prevent contraception. 3. How do plants respond to their environment, light and gravity? 4. What does a plant use hormones for and what is their commercial use? 5. What is normal body temperature, how is it controlled and what happens when you get too hot or cold? 6. Why is it important to maintain water balance, how is urine produced and how does it change? 7. How does the body control blood sugar levels.	1. What do your kidneys look like inside and what does a nephron look like? 2. How does the body control how much urine is produced? 3. How is biomass transported through the ecosystem? 4. How effective is biomass transfer? 5. How are nutrients recycled through the environment? 6. What is the difference between decomposers and detritivore?	1. What factors affect the rate of decomposition? 2. What is the history of genetics? 3. How do scientists use sampling techniques to sample plants and animals?	1. How does scientists sample plant and animals? 2. How is human activity affecting the Earth's biodiversity 3. What is food security and why is it important?	1. What is selective Breeding? 2. What is genetic engineering? 3. How do plants defend themselves against communicable diseases. 4. How are plant diseases detected in the field? 5. What are monoclonal antibodies? 6. How are monoclonal antibodies produced? 7. How are monoclonal antibodies used?

Vocabulary	• Genes • Bases • Polymers • Nucleotides • Complementary base paring • mRNA • Transcription, translation • Cornea, pupil • Iris • Lens • Ciliary body • Suspensory ligaments • Optic nerves • Short sightedness • Long sightedness • Cerebrum • Cerebellum • Medulla • Hypothalamus • Pituitary Gland • MRI and CT scans • Central nervous system • Peripheral nervous system • Radiotherapy and chemotherapy • Deep brain stimulation	• Stimulus • Receptors • Effectors • Sensory neurones • Motor neurones • Relay neurons • Endocrine glands • Target organs • Hypothalamus • Thyroid Gland • Thyroxine. • Homeostasis. • Adrenaline • Ovulation • Follicle-stimulating hormone • Oestrogen • Luteinising hormone • Progesterone • Contraception • Fertility • In Vitro Fertilisation • Phototropism • Gravitropism • Auxin • Ethene • Gibberellins • Parthenocarpy • Rooting powder • Dormancy • Thermoregulation • Vasodilation • Vasoconstriction	• Lysis • Solute • Nephrons • Tubules • ADH (Anti-diuretic hormone) • Bowman's capsule • Loop of Henle • Glomerulus • Cortex • Medulla • Zone of inhibition • Vaccine • Habitat • Interdependence • Mutualism • Parasitism • Population • Predation • Producers • Pyramid of biomass • Trophic level	• Abiotic factors • Biomass • Biotic factors • Carbon cycle • Community • Competition • Consumers • Decomposers • Detritivores • Ecosystem • Egestion • Excretion • Habitat • Identification key • Random sampling • Non-random sampling • Quadrat	• Biodiversity • Capture-recapture • Conservation • Deforestation • Ecotourism • Endangered species • Habitat • Identification key • Indicator species • Non-random sampling • Random sampling • Sample • Seed bank • Biological control • Biotechnology • Donor organism • Food security • Foreign genes • Sustainable food production	• Decomposers • Detritivore • Physical defences • Chemical defences • Cuticle • Cell Wall • Insecticides • Antibacterial • Antifungal • Cyanide • Cutinases • Pyrethrins • Diagnosis • DNA analysis • Antigens • Monoclonal antibodies • Genetically modified • Hybridomas • Myelomas • Lymphocytes • Immune response • Antibodies • Pregnancy test • Antivirals • Antibiotics • Zone of inhibition • Aseptic technique • Sterile • Autoclave • Genetic engineering • Host organism • Hydroponics • Intensive farming • Ligase enzymes • Organic farming

						• Restriction enzymes • Selective breeding • Sticky ends • Vector • Antigens • Antiseptic • Antivirals • Aseptic technique • Clinical trial • Communicable disease • Contagious • Diagnosis • Disease • Droplet infection • Immunity • Incidence of a disease • Incubation period • Lymphocytes • Antitoxins • Monoclonal antibodies • Pathogen • Phagocytes • Placebo • Sterile
Practical Skills	• Investigate reaction rate • Eye dissection	• Demonstrate phototropism	• Kidney Dissection	• Investigate decomposition	• B2 PAG – Sampling	Investigate the spread of disease