



Intent: The Y11 Biology curriculum aims to complete the GCSE content by working through the last 4 modules, develop practical and mathematical skills and enable students to prepare for the terminal assessments confidently and equip them with the substantive knowledge to enable them to achieve their potential. To allow students to understand how Biology relates to the world that the live in, and how different careers also link to Biology.

Year 11 Biology	Term 1 September to December B6: Plant Structures and their Functions B7: Animal Coordination, Control & Homeostasis	Term 2 January to Easter B8: Exchange and Transport in Animals B9: Ecosystems and Material Cycles.	Term 3 April to July Revision & Terminal Exams
Knowledge (facts, information, concepts and key terminology)	The photosynthesis reaction and the factors which can limit it. The inverse Square Law The tissue layers in a leaf Plant transport systems: transpiration and translocation. Adaptations to prevent water loss. Plant hormones The role of major hormones in the body including Progesterone; Oestrogen; LH; FSH; Insulin; Glucagon; Adrenaline & Thyroxine and ADH Homeostasis mechanisms, the regulation of glucose and BMI & diabetes. Thermoregulation and Osmoregulation	Aerobic and anaerobic respiration reactions including the equations Surface area to volume ratio and its effect on / dictation for the requirement of an internal transport system. The major constituents of human gas exchange system and factors which effect the rate of diffusion The major constituents of the circulatory system including the heart; arteries, veins, and capillaries; Red blood cells, white blood cells and platelets Ecosystems and the interactions within them including food webs, parasitism & mutualism. The impact of humans on different ecosystems as well as the need for food security Nutrient cycles within an ecosystem including the water; nitrogen and carbon cycles. Indicator species and how they are used to assess pollution. Decomposition and factors which effect its rate.	Revision based lessons to recap Knowledge including Yr 10 material and specific gaps identified by EOU Assessments
Understanding (ability to connect and synthesise knowledge within a context)	Describe the photosynthesis reaction and explain how different factors can limit the reactions rate. Describe the adaptations found in plants to maximise the rate of photosynthesis whilst limiting water loss. Describe the two transport systems within a plant and compare their different adaptations Identify the major plant hormones and explain their effect on plant growth. Identify the major animal hormones and describe their function. Explain how hormones regulate the menstrual cycle Explain how a negative feedback loop is used by the body to regulate blood glucose levels Describe the structure of the kidney and explain its function in osmoregulation.	Describe both the anaerobic and aerobic respiration reactions and explain how both are used during exercise. Identify the major parts of the pulmonary system and explain their functions. Describe the process of gas exchange taking place in the alveoli. Explain how the alveoli are adapted for efficient gas exchange and which factors could affect diffusion across the alveoli using Fick's law Describe the major parts of the cardiovascular system and explain their roles. Explain how arteries, veins, capillaries and red blood cells all are adapted, to perform their function Construct a food web for a given ecosystem, discuss members of that web in terms of their trophic level. Discuss the advantages and disadvantages of parasitism and mutualism. Identify the impacts of human activity on the environment and explain the need for food security Explain how different nutrients are cycled between the atmosphere, the ground and biological organisms	Revision based lessons to recap Knowledge including Yr 10 material and specific gaps identified by EOU Assessments
Skills (successful application of knowledge and understanding to a specific task)	The use of Microscopes to identify different tissue layers in a leaf. Mathematical calculations of BMI and light intensity using the inverse square law. Fine motor skills used to successfully dissect a kidney Identify and discuss the criteria for IVF inclusion	Observing a living organism to gather scientific data. Using presented data from a graph to draw a conclusion Mathematical calculations using Fick's law Fine motor skills used to successfully dissect a heart Compare and contrast the structure of the different blood vessels and relate that to their function Using different sampling techniques to gather scientific data on populations of organisms within a habitat	
Formal Assessments	End of unit assessments for B6 & 7	End of unit assessments for B8 & 9	External Examination

By the end of the year students on course for at least a grade 5 will...

- Write the word equation for photosynthesis and explain how light, CO₂ and temperature affect the rate of photosynthesis. Identify and describe transport systems in plants. **Identify and describe the function of the major plant growth Hormones**
- Identify the main endocrine glands and the functions of these hormones. **Outline the feedback loop control systems for thermoregulation and osmoregulation including the hormones involved at each stage. Identify the parts of the excretory system and their role.**
- Recall the word equations for both Aerobic and Anaerobic respiration, including analysing practical data in a living organism.
- Identify the major organs in both the cardiac and pulmonary system, fully label a diagram of the heart showing the passage of blood and identifying the four chambers, arteries and veins.
- Identify the parts of blood and compare and contrast the structure of arteries, veins and capillaries and explain how their different structures are related to their function.
- Be able to construct a food web from a description of an ecosystem, **labelling the food web with the correct trophic levels**
- Discuss different ways in which humans are impacting the ecosystem around us and outline the benefits and drawbacks to schemes such as fish farming. **Explain the need for further methods of food security due to our changing environment**
- Describe the steps in the Water and Carbon Cycle. Describe the steps in the Nitrogen cycle and explain the role of nitrifying and denitrifying bacteria. **Discuss the importance of mutualistic nitrogen fixing bacteria.**