Progression Model – Year 10 Biology (Combined Higher Tier)

Module Title: Communicable diseases and Plant organisation	**Module Title:** Bioenergetics and Nervous control	**Module Title:** Hormonal Control
Learning Intent for this module: Building upon what they learned in the health topic in Y7 students will study infectious diseases. Students will explore how to avoid disease spread, and the function of the human immune system. They will learn about antibiotics, the problems of resistance and the need to develop new drugs. Students will build upon what they learned in the photosynthesis topic in Y8 by studying plant organisation, how the leaf is adapted for photosynthesis and the importance of plant transport systems. • Communicable diseases • Plant tissues, organs and systems	**Learning Intent for this module:** Building upon what they learned in the Photosynthesis topic in Y8 students will explore how plants harness the Sun's energy in photosynthesis in order to make food and provide the oxygen in the Earth's atmosphere. They will add more detail to what they learned in the Respiration topic in Y8 to study how animals and plants use this oxygen to oxidise food by aerobic respiration to transfer the energy that the organism needs to survive. Students will learn how the body's nervous system can sense changes and rapidly respond to them. • Bioenergetics • The nervous system	**Learning Intent for this Module:** Students will learn how internal conditions of the body are maintained by the body's homeostatic control systems. Students will explore how the hormonal system controls blood glucose and how dysfunction leads to diabetes. They will build upon what they learned in the reproduction topic in Y7 by looking at the importance of hormones in reproduction and controlling the menstrual cycle and their use in contraception and fertility treatment. • The endocrine system
Key Content to be learned: Students will learn how pathogens cause infectious diseases in animals and plants. They will explore how to avoid disease spread, how the immune system is able to destroy pathogens and prevent disease and how vaccination can enhance the process. They will learn the importance of antibiotic treatment of bacterial diseases, the problems of antibiotic resistance and the need to develop new drugs. Students will learn how cells are arranged into tissues organs and systems in plants. They will study the leaf, its tissues and how it is adapted for its function of photosynthesis. They will look at conditions affecting	**Key content to be learned:** Students will learn how plants harness the Sun's energy in photosynthesis in order to make food. They will also learn how important this process has been in providing the oxygen in the Earth's atmosphere. They will learn about factors, which affect photosynthesis and have the opportunity to carry out an investigation to study the effect of light intensity on the process. Students will learn how animals and plants use oxygen to oxidise food by aerobic respiration to transfer the energy that the organism needs to survive. They will compare this to the process of anaerobic respiration, which does not require oxygen but is less efficient.	**Key Content to be learned:** Students will learn how the body requires homeostatic control systems to constantly monitor and adjust the composition of the blood and tissues. They will learn that these control systems include receptors, which sense changes, and effectors that bring about changes. They will also explore the hormonal system, which usually brings about slower changes than the nervous system. Students will explore how the hormonal system controls blood glucose and how diabetes is the result of problems in that control system. They will learn how hormonal coordination is particularly important in reproduction since it controls the menstrual cycle. They

transpiration in plants and the importance of the transpiration stream in water and mineral transport through xylem tissue. They will contrast this with the translocation of sugars through phloem tissue to supply all parts of the plant with food from photosynthesis	Students will learn that cells in the body can only survive within narrow limits. Requiring a constant temperature and pH as well as a constant supply of dissolved food and water. They will learn how the body's control systems can sense changes and react to them. They will explore the structure and function of the nervous system and how it coordinates fast responses such as reflex actions.	will learn how an understanding of the role of hormones in reproduction has allowed scientists to develop contraceptive drugs and drugs that can increase fertility.
Prior knowledge: • Diseases can be caused in a number of ways is covered first in the health topic in Y7 and built upon when looking at health and lifestyle diseases in Y9 • The parts of plants and the importance of water for photosynthesis are covered in the photosynthesis topic in Y8	**Prior knowledge:** • The importance of photosynthesis is studied in Y8 in both photosynthesis and as part of the carbon cycle in the ecology topic • Respiration is introduced in Y8 following on from the gas exchange topic in Y7 and breathing system in Y9 • The importance of sensitivity as one of the seven life processes and nerve cells as specialised cells are looked at in the cells topics in Y7 and Y9.	**Prior knowledge:** • The role of hormones in puberty and the menstrual cycle is introduced in the Y7 topic of reproduction
Key tasks for this module: • Stopping the spread of disease • Infectious Diseases	Key tasks for this module: • Plant organisation and photosynthesis • Respiration	Key tasks for this module: • Nervous and endocrine systems • End of year assessment