

Year 11 - Biology

Autumn Term

Ecosystems and material cycles are explored in Biology and students will learn how living organisms may form populations of single species, communities of many species and ecosystems, interacting with each other, with the environment, and with humans in many different ways, as well as being able to explain and appreciate how the chemicals **and energy** in an ecosystem are constantly cycling through the natural world. **Issues such as the causes and assessment of pollution are considered as are the problems the planet is facing surrounding food security** This topic will build on student knowledge of food chains and webs from KS3 and students will have the chance to carry out sampling methods within the school grounds to understand how scientists use techniques to estimate population sizes and measure the distribution of organisms so they can gauge the impact of human activity on our environment.

Biology then changes to focus largely on humans and how hormones control homeostatic mechanisms and fertility. Our body's internal and external environment is in a constant state of flux to ensure we feel 'normal'. Students will learn about how changes within our body help us survive an ever-changing environment. Students will build on their basic KS3 knowledge of the menstrual cycle and start to explain how hormones and negative feedback are involved in controlling human fertility. They will also explore the role of hormones in regulating blood glucose levels and metabolic rate as well as examining the effects of adrenalin on a variety of body systems. **In addition, the role of the kidneys in osmoregulation is examined as are the various structures in the skin that are responsible for thermoregulation.**

Spring Term

The final topic is exchange and transport in animals and builds on KS3 knowledge and understanding of the digestive and respiratory systems and also revisits the core biological ideas of diffusion, **the factors affecting rate of diffusion** and adaptations of animal cells. Students will gain an appreciation for the highly adapted tissues and organs within these systems and be able to explain how they enable living processes to be performed efficiently.

Summer term

Exam preparation and revision