

Curriculum Summary – Biology (Year 11)

Autumn

B10: The human nervous system

In this chapter students will:

- Study the principles of homeostasis and will be able to give some examples and outline the control system involved.
- Learn and recall details of the human nervous system, its structure and function and reflex arcs.
- Learn about receptors, stimuli and that receptors detect changes in stimuli.

B11: Hormonal control

In this chapter students will:

- Study the principles of hormonal control and the endocrine system. They will be able to identify the main parts of the endocrine system and recall the hormones they produce.
- Learn how blood-glucose concentration is controlled and the causes and treatments of both type 1 and type 2 diabetes.
- Learn about the process of negative feedback, particularly as applied to the hormones adrenaline and thyroxine. (Higher tier)
- Study hormones in human reproduction and the menstrual cycle. They will recall the action of hormones in bringing about puberty.

B13: Reproduction

In this chapter students will:

- Outline asexual and sexual reproduction, and will be aware of the importance of meiosis, fertilisation, and variation in sexual reproduction.
- Study DNA and its role in inheritance. They will also be aware of the genetic code and genomes.
- Study inheritance and will be able to use genetic terms and set out a genetic cross with the use of a Punnett square.
- Describe the inheritance of genetic disorders as applied to polydactyly and cystic fibrosis and will be aware of developments in genetic engineering with the aim of curing genetic disorders.

Spring

B14: Variation

In this chapter students will:

- Discuss the causes of variation in terms of genetic, environmental, or a combination of both factors.
- Learn about evolution by natural selection, the role of mutation in variation and the theory of evolution by survival of the fittest.
- Study the process of selective breeding and genetic engineering, all students will understand what is meant by the term and be able to give examples of its use and consider the potential benefits and problems.

B15: Genetics and evolution

In this chapter students will:

- Learn about the evidence for evolution, including the fossil record and reasons for extinction.
- Describe antibiotic resistant bacteria and their fast evolution, in particular the problem of MRSA.
- Understand how living organisms are classified.

B16: Adaptations, interdependence and competition

In this chapter students will:

- Study communities, environments, adaptations, and competition and recall the precise meaning of key ecological terms.
- Students will understand the importance of communities, including the interdependence of all the species present and be able to give real examples to illustrate interdependence.
- Learn about and recall the effects of abiotic and biotic factors on populations.
- Measure the distribution of organisms with quadrats and transects and carry out a practical to investigate the population size of a common species in a habitat.
- Study competition in animals and plants and will recall what factors they compete for and how they compete, and how they become successful in their environments.

Summer

B17: Organising an ecosystem

In this chapter students will:

- Study how feeding relationships are represented in food chains and the importance of photosynthesis in feeding relationships.
- Learn about and recall the main feeding relationships within a community and understand how the numbers of predators and prey are inter-related.
- Study the water cycle and should recall the main stages of condensation, precipitation, evaporation, transpiration, and respiration.
- Understand what the carbon cycle is, recall the processes that remove carbon dioxide from the atmosphere and return it again and the role of microbes.

B18: Biodiversity and ecosystems

In this chapter students will:

- Study biodiversity and ecosystems, starting with the reasons for and the effects of the human population explosion.
- Understand the effect of different types of pollution including land, water, and air pollution.
- Outline the processes of deforestation and peat destruction and will be able to distinguish greenhouse gases from those that cause acid rain.
- Understand how waste, deforestation, and global warming affect biodiversity, and be able to give examples of some of the actions being taken to stop the reduction in biodiversity.