

The curriculum for this stage of students' education has been designed to build upon students' prior knowledge from Year 12 A Level Biology. Covering how cells obtain energy and convert it into a useable form to power cellular processes. How nutrients are recycled between the living and non-living environment. How organisms respond to stimuli to enhance their survival chances, involving regulation of internal factors and withstanding external changes. How populations interact and pass on advantageous features to drive evolution by natural selection. How genetics influences the organism and how we can manipulate genes. Studying A-level Biology at university provides all sorts of exciting career options, including: Doctor, Clinical molecular geneticist, Nature conservation officer, Pharmacologist, Research scientist, Vet, Secondary school teacher, Marine biologist & Dentist.

HALF TERM 1: energy Transfer in & between organisms

STUDENTS MUST KNOW:

- How photosynthesis occurs by the light & dark reactions
- How energy is released in cells by respiration
- The structure & function of mitochondria
- The stages in aerobic respiration
- The stages in anaerobic respiration
- Comparison of aerobic & anaerobic respiration
- Food chains & energy transfers
- Productivity in habitats
- Nutrient cycles
- The use of natural & artificial fertilisers
- The environmental impact of using fertilisers

HOW THIS WILL BE ASSESSED:

Progress test half way through each module
End of module tests.

HALF TERM 2: Organisms responding to changes in their internal & external environments

STUDENTS MUST KNOW:

- How organisms respond to stimuli
- How plant growth factors work
- How a simple reflex action occurs
- Receptors in animals
- How heart rate is coordinated
- Nervous communication
- How nerve impulses are initiated and carried by neurons

HOW THIS WILL BE ASSESSED:

Progress test half way through each module
End of module tests.

HALF TERM 3: Organisms responding to changes in their internal & external environments

STUDENTS MUST KNOW:

- The action potential
- The structure & function of synapses
- The structure & function of skeletal muscle
- How homeostasis uses feedback loops
- Hormonal regulation of blood sugar levels
- Diabetes and its control
- The structure & function of the kidneys regulating water content in the body
- The role of hormones in osmoregulation

HOW THIS WILL BE ASSESSED:

Progress test half way through each module
End of module tests.

HALF TERM 4: Genetics, populations, evolution & ecosystems

STUDENTS MUST KNOW:

- How mono & dihybrid inheritance works
- Calculate probability in genetic crosses
- Sex-linkage & autosomal linkage
- Epistasis & Chi squared test
- Population genetics & Natural selection
- Effects of isolation on speciation
- Variation & competition affecting populations
- Conservation of habitats

HOW THIS WILL BE ASSESSED:

Progress test half way through each module
End of module tests.

HALF TERM 5: The control of gene expression

STUDENTS MUST KNOW:

- The causes & effects of gene mutations
- Stem cells & totipotency
- How transcription is regulated
- Genome projects, Gene expression & cancer
- Recombinant DNA technology
- Gene cloning methods & locating genes
- Genetic screening
- Genetic finger printing

HOW THIS WILL BE ASSESSED:

Progress test half way through each module
End of module tests.

HALF TERM 6: Revision & in exams

STUDENTS MUST KNOW:

The full content from year 12 and 13 as outlined within the year 12 and 13 Long Term sequences.

HOW THIS WILL BE ASSESSED:

By terminal external examinations



Embedding this knowledge can be supported at home by reading around the subject, making use of the supplied text book. Reading online scientific articles from the New Scientist and Scientific American websites. Watching biological documentaries to develop an understanding of contemporary biological issues.