

Biology @ WBS Year 12 Roadmap

Subject Aim: To build on prior GCSE knowledge in Biology and to understand and explore biological molecules, cells, exchange between organisms and the environment, genetic information, variation and the relationships between organisms. To develop problem solving and practical skills including mathematical skills and to develop inquisitive and independent learners.

Autumn Term	Topic 1 Biological Molecules
	Fundamental biological molecules in organisms including carbohydrates, lipids and proteins. Enzyme structure and function. Required practical 1: Enzyme activity.
	Topic 2 Nucleic Acids
	Structures of DNA and RNA, DNA replication and the role of water in living organisms.
	Topic 3 Cell Structure
Eukaryotic and prokaryotic cell structure and function. Microscopy, cell division and the cell cycle. Required practical 2: Mitosis.	
Topic 4 Transport Across Cell Membranes	
Structure of the cell membrane, diffusion, osmosis, active transport and co-transport. Required practical 3: Osmosis Required practical 4: Membrane permeability	
Topic 5 The Immune System	
The role of T and B lymphocytes in the defence against disease. Antibodies and vaccination.	
Spring Term	Topic 6 Exchange
	Gas exchange within and between organisms and the environment, in animals, plants, insects and fish.
	Topic 7 Mass Transport
	Transport of oxygen in mammals, the cardiac cycle, and the transport of water and organic molecules in plants. Required practical 5: Heart dissection
Topic 8 DNA, Genes and Protein Synthesis	
The triplet code, transcription and translation.	
Topic 9 Genetic Diversity	
Mutation, meiosis, diversity and selection. Required practical 6: Aseptic techniques	
Summer Term	Topic 10 Biodiversity
	Classification, species diversity and human activity.
TTP	Maths for Biologists
	Calculating uncertainties, ratios, logs and rates. 3 statistical tests: Correlation coefficient, Students T test and Chi-Squared test.
	At timetable promotion you will move on to Y13 content

Assessment

There will be 3 formal Key Assessments in Y12. Each will be a test of all of the content you have covered up to that point in time. You will be given the chapters from the textbook that you need to use 2-3 weeks prior to the assessment. You should also use your SIS to help you to prepare and revision material available on Brightspace. You will be expected to revise independently outside of lesson time. The third assessment in Year 12 will be a formal mock exam.

Key Assessment 1	Monday 2 nd Oct 2023
Key Assessment 2	Thursday 30 th Nov 2023
Key Assessment 3	Tuesday 30 th Jan 2024
Key Assessment 4	Wednesday 24 th Apr 2024

Homework and Revision

Homework is set by your class teachers on Brightspace. Announcements regarding Key Assessments will be made by the Head of Biology on Brightspace. You will also be told about this in lessons. You are strongly advised to revisit your notes often throughout the year to consolidate your learning and to make assessment preparation as straightforward as possible.

Enrichment themes

We will highlight links to careers in Biology throughout the year. You are encouraged to approach your Biology teachers for further advice on pursuing Biology at a higher level. There will also be an opportunity to attend a residential fieldtrip to enhance your knowledge and understanding of ecology.

Where Next?

Year 13 to continue your studies and to find out more about life after school.

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