

Department Curriculum and Assessment Outline

Department: Science

Year Group: 10

Teaching, learning and assessment during the course: **Combined Science**

Timing (Weeks, half terms)	Unit Title (as applicable)	Key Question(s) e.g. Why do we need maps and how do we use them? How do quest stories work?	How will we know that pupils can answer the key question(s)? Data that will inform attainment grade	Key Themes of the unit e.g. grammar, processes, events, styles
Autumn 1	B1 Key concepts in Biology	What are the structure and function of cells.	Core practical write up Active learn assessment End of topic review End of unit test	Core practicals – using microscopes; pH and enzymes; Osmosis Structures of animal and plant cells Structure of Eukaryotic cells Enzymes Osmosis
Autumn 2	B2 Cells and control	How cells grow and divide in plants and animals. How the nervous system work.	Core practical write up Active learn assessment End of topic review End of unit test	Mitosis and growth in cells Stem cells Nervous system Synapses
Spring 1	B3 Genetics	The structure and function of DNA and its role in and inheritance.	Core practical write up Active learn assessment End of topic review End of unit test	Meiosis DNA Alleles Inheritance
Spring 2	B4 Natural selection and genetic modification	Describe the process of evolution.	Core practical write up Active learn assessment End of topic review End of unit test	Darwin's theory of evolution Classification Genes in agriculture
Summer	B5 Health, disease and the development of medicines.	What is the cause, spread and control of disease?	Core practical write up Active learn assessment End of topic review End of unit test	Health and disease Non – communicable disease Cardiovascular disease Pathogens Plant disease Immune system and antibiotics.

Department Curriculum and Assessment Outline

Department: Science: Biology

Year Group: 11

Teaching, learning and assessment during the course: **Combined Science**

Timing (Weeks, half terms)	Unit Title (as applicable)	Key Question(s) e.g. Why do we need maps and how do we use them? How do quest stories work?	How will we know that pupils can answer the key question(s)? Data that will inform attainment grade	Key Themes of the unit e.g. grammar, processes, events, styles
Autumn 1	B6: Plant Structures and their functions	What are the key processes of plants?	Core practical write up Active learn assessment End of topic review End of unit test	Core practical – light intensity and photosynthesis Photosynthesis. Absorbing water and mineral ions. Transpiration and translocation.
Autumn 2	B7 Animal Coordination, Control and Homeostasis	How hormones control different organs of the body.	Active learn assessment End of topic review End of unit test	How hormones control the metabolic rate How hormones control the menstrual cycle How hormones control blood glucose
Spring 1	B8 Exchange and transport in Animals	How the heart, lungs, blood vessels and blood are adapted for their functions	Core practical write up Active learn assessment End of topic review End of unit test	Core practical – respiration rates Factors affecting diffusion The heart and circulatory system Cellular respiration
Spring 2	B9 Ecosystems and Material Cycles	How ecosystems are organised – the flow of energy; different relationships and the impact of humans.	Core practical write up Active learn assessment End of topic review End of unit test	Core practical- Quadrats and transects Energy transfers Abiotic and biotic factors Pollution Parasitism and Mutualism relationships Biodiversity Water; Carbon and Nitrogen Cycles
Summer	Review and GCSE preparation		Key words test Past papers Revision booklet	Review and prepare for the Biology GCSE

Department Curriculum and Assessment Outline

Department: Science **Year Group: 10** **Teaching, learning and assessment during the course: Biology (Separate)**

Timing (Weeks, half terms)	Unit Title (as applicable)	Key Question(s) e.g. Why do we need maps and how do we use them? How do quest stories work?	How will we know that pupils can answer the key question(s)? Data that will inform attainment grade	Key Themes of the unit e.g. grammar, processes, events, styles
Autumn 1	B1 Key concepts in Biology	What are the structure and function of cells.	Core practical write up Active learn assessment End of topic review End of unit test	Core practicals – using microscopes; testing food; pH and enzymes; Osmosis Structures of animal and plant cells Structure of Eukaryotic cells Enzymes Osmosis
Autumn 2	B2 Cells and control	How cells grow and divide in plants and animals. How the nervous system work.	Core practical write up Active learn assessment End of topic review End of unit test	Mitosis and growth in cells Stem cells Nervous system The eye Synapses
Spring 1	B3 Genetics	The structure and function of DNA and its role in protein synthesis and inheritance.	Core practical write up Active learn assessment End of topic review End of unit test	Sexual and asexual reproduction Meiosis DNA Protein Synthesis Genetic cross diagrams
Spring 2	B4 Natural selection and genetic modification	Describe the process of evolution. What is genetic modification and how is this used in farming.	Core practical write up Active learn assessment End of topic review End of unit test	Darwin's theory of evolution Classification Tissue culture Genetic modification in agriculture Fertilisers and biological control

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Summer	B5 Health, disease and the development of medicines.	What is the cause, spread and control of disease?	Core practical write up Active learn assessment End of topic review End of unit test	Health and disease Non – communicable disease Cardiovascular disease Pathogens Virus life cycle Plant disease Immune system and antibiotics.
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Department Curriculum and Assessment Outline

Department: Science **Year Group: 11** **Teaching, learning and assessment during the course: Biology (Separate)**

Timing (Weeks, half terms)	Unit Title (as applicable)	Key Question(s) e.g. Why do we need maps and how do we use them? How do quest stories work?	How will we know that pupils can answer the key question(s)? Data that will inform attainment grade	Key Themes of the unit e.g. grammar, processes, events, styles
Autumn 1	B6: Plant Structures and their functions	What are the key processes of plants?	Core practical write up Active learn assessment End of topic review End of unit test	Core practical – light intensity and photosynthesis Photosynthesis and the limiting factors. Diffusion; Osmosis and active transport Plant adaptation Plant hormones and their uses
Autumn 2	B7 Animal Coordination, Control and Homeostasis	How hormones control different organs of the body.	Active learn assessment End of topic review End of unit test	How hormones control the metabolic rate How hormones control the menstrual cycle How hormones control blood glucose Thermoregulation Osmoregulation The role of the kidney
Spring 1	B8 Exchange and transport in Animals	How the heart, lungs, blood vessels and blood are adapted for their functions	Core practical write up Active learn assessment End of topic review End of unit test	Core practical – respiration rates Factors affecting diffusion The heart and circulatory system Cellular respiration
Spring 2	B9 Ecosystems and Material Cycles	How ecosystems are organised – the flow of energy; different relationships and the impact of humans.	Core practical write up Active learn assessment End of topic review End of unit test	Core practical- Quadrats and transects Energy transfers Abiotic and biotic factors Pollution Parasitism and Mutualism relationships Biodiversity Water; Carbon and Nitrogen Cycles Rates of decomposition
Summer	Review and GCSE preparation		Key words test Past papers	Review and prepare for the Biology GCSE



Department Curriculum and Assessment Outline

			Revision booklet	
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Department: Biology **Year Group:** Y12 **Teaching, learning and assessment during the course: A Level Biology**

Timing (Weeks, half terms)	Unit Title (as applicable)	Key Question(s) e.g. Why do we need maps and how do we use them? How do quest stories work?	How will we know that pupils can answer the key question(s)? Data that will inform attainment grade	Key Themes of the unit e.g. grammar, processes, events, styles
Autumn Teacher 1	Unit 1 Topic 1: Lifestyle, Health and Risk	To describe the biological molecules our body gets from food and the function of the circulatory system.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • Biological molecules • Circulatory systems • Cardiovascular diseases
Autumn Teacher 2	Unit 1 Topic 2: Genes and Health	To know the structure of cells and describe the key processes which occur within the cell.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • Transport across the cell membrane • Protein structure and their functions • Role of DNA in controlling the cell's activity.
Spring Teacher 1	Unit 4 Topic 4: Biodiversity and Natural Resources	To know how plant cells work and the importance of biodiversity.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • Ultrastructure of plants • Specialised plant cells • Conditions of bacterial growth • Biodiversity and endemism • Natural Selection and evolution
Spring Teacher 2	Unit 2 Topic 3: Voice of the Genome	Understand how cells function.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • Ultrastructure of eukaryotic cells and prokaryotic cells. • Reproduction in mammalian animals • Understand how cells divide. • Understand the role of gametes in reproduction.
Summer Teacher 1 and 2	Unit 4 Topic 5: On the Wild Side	Understand the relationships within an ecosystem.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • Calculate efficiency of biomass and energy transfers. • Overall reactions of photosynthesis • Look at the evidence for climate change. • The carbon cycle.

Department: Biology **Year Group:** Y13 **Teaching, learning and assessment during the course: A Level Biology**

Timing (Weeks, half terms)	Unit Title (as applicable)	Key Question(s) e.g. Why do we need maps and how do we use them? How do quest stories work?	How will we know that pupils can answer the key question(s)? Data that will inform attainment grade	Key Themes of the unit e.g. grammar, processes, events, styles
Autumn Teacher 1	Unit 4 Topic 5: On the Wild Side	Understand the relationships within an ecosystem.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • Calculate efficiency of biomass and energy transfers. • Overall reactions of photosynthesis • Look at the evidence for climate change. • The carbon cycle.
Autumn Teacher 2	Unit 4 Topic 6: Infection, Immunity and Disease	Understand how diseases are spread and how our bodies protect us.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • How DNA profiling is used for identification • Understand the roles of antigens and antibodies in the body's immune response • Understand the difference between bacteriostatic and bactericidal antibiotics. • Understand how to determine the time of death of a mammal.
Spring Teacher 1	Unit 5 Topic 7: Run for your Life	Understand how the heart, lungs and muscles all work together during exercise.	Key practical write up Active learn assessment End of unit test	<ul style="list-style-type: none"> • Know the way in which muscles, tendons, the skeleton and ligaments interact to enable movement, the structure and physiological differences. • Understand all the individual reactions involved in aerobic respiration. • Know the myogenic nature of cardiac muscle, the electrical activity and how to calculate cardiac output. • Understand how medical technology is enabling those with injuries and disabilities to participate in sports.
Spring	Unit 5 Topic 8: Grey Matter	Understand the nervous system of	Key practical write up Active learn assessment	<ul style="list-style-type: none"> • Know the structure and function of different neurons.

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Teacher 2		organisms and how drugs affect it.	End of unit test	<ul style="list-style-type: none"> • Understand how a nerve impulse (action potential) is conducted along an axon and the role of synapses. • Explain the nervous systems of organisms and the structure of the brain.
Summer Teacher 1 and 2	Revision	Review all topics and prepare for the exam	Past papers Short quizzes Vocabulary tests	