# A Level Biology Learning Journey

ORMISTON SWB ACADEMY

[OAT] Ormiston Academies Trust
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Exam Preparation and Revision

The effect of human activities
Management of environmental resources
Sustainable ecosystems

PCR and its application
Principles and techniques of genetic engineering
Ethical issues of genetic manipulation
Gene therapy in medicine
Biotechnology
Immobilised enzymes
Dynamic ecosystems
Biomass transfer
Primary succession
Carbon and nitrogen cycles
Sampling an ecosystem
Interspecific and intraspecific competition
Conservation and preservation

Principles of DNA profiling
Gene sequencing
DNA sequencing
Artificial selection
Allopatric and sympatric speciation
$p^2 + 2pq + q^2 = 1$
Hardy-Weinberg principal
Chi-squared testing
Autosomal linkage, sex linkage and epistasis
Genetic variation
Phenotypic variation
Regulation of gene expression
Cellular control
**Module 6 Genetics, Evolution and Ecosystems**

Reflex actions
Coordination of nervous and endocrine system responses
Hormonal and nervous mechanisms of heart rate
Skeletal muscle
Sliding filament theory
Chloroplast structure
Photosynthetic pigments
Light dependent stage of photosynthesis
Light independent stage of photosynthesis
Carbon fixation
Photosynthesis and limiting factors
Mitochondrion structure
Stages of aerobic respiration

Human brain structure and function
Organisation of the mammalian nervous system
Commercial uses of plant hormones
Plant hormones
Phototropism and geotropism
Diabetes mellitus
Glucoregulation
Histology of the pancreas
Adrenal gland structure and function
Endocrine communication
Reaction time
Structure and role of synapses in neurotransmission
Generation and transmission of nerve impulses

**Module 5 Communication, Homeostasis and Energy**
Communication and homeostasis
Cell Signalling
Physiological responses in ectotherms and endotherms
Liver structure and function
Histology of liver tissue
Mammalian kidney structure and function
Kidney dissection
Histology of nephrons
Control of water potential
Kidney failure
Excretory products and medical diagnosis
Mammalian sensory receptors

**Year 13**
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Natural selection and evolution
Adaptation
Applying statistical techniques
Variation
Evidence for natural selection
Classification and phylogeny
Evidence used in classification
Features used in classification
Biological classification
Protection of species and habitats
Ix-situ and ex-situ conservation
Maintaining biodiversity
Factors affecting biodiversity
Calculating biodiversity

Transpiration stream
Adaptations of plants
Translocation
**Module 4 Biodiversity, Evolution and Disease**
Pathogens
Transmission of pathogens
Plant defences against pathogens
Primary defences against disease
Secondary non-specific defences
Specific immune response
Antibodies
Vaccination
Development and use of drugs
Biodiversity
Sampling animals
Sampling plants

Transpiration
Transport tissues
Transport in plants
Transport of carbon dioxide
Transport of oxygen
Coordination of the cardiac cycle
Cardiac cycle
The structure of the heart
Exchange at the capillaries
Blood vessels
Transport in animals
Gas exchange in other organisms
Measuring lung volume
Tissues in the gaseous exchange system
Mammalian gaseous exchange system
Movement of water through plants

The effect of pH on enzyme activity
Enzyme inhibition
Rate of enzyme controlled reactions
Cell membrane structure
Diffusion across cell membranes
Osmosis
Active transport
Factors affecting membrane permeability
Mitosis
Cell cycle and its regulation
Meiosis
Diversity in plant and animal cells
Organs and organ systems in animals
**Module 3 Exchange and Transport**
Stem cells

The effect of temperature on enzyme activity
Mechanism of enzyme action
Cofactors
Biological catalysts
Transcription and translation
DNA replication
DNA
Chromatography
Quantitative testing
Qualitative testing
Inorganic ions
Fibrous and globular proteins
Protein structure & bonding
Amino acids

**Module 2 Foundations in Biology**
Microscopes
Slides and photomicrographs
Measuring objects with a light microscope
Ultrastructure of eukaryotic cells
How organelles work together
Prokaryotic cells
Molecular bonding
Properties of water
Monosaccharides
Polysaccharides as energy stores
Polysaccharides as structural units
Phospholipids and cholesterol
Triglycerides

**Year 12**
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