Biology Learning Journey

Glenthorne High School
Achievement for all

Skills

Knowledge

Year 11 "Becoming KS5 Ready"

Year 10 "Developing into Independent Learners"

Year 9 "Developing Skills to Enhance Learning"

Year 8 "Taking Responsibility for Learning"

Year 7 "Transition to High School"

Future Education, Employment & Training

KS5 Study

Revision

Ecosystems
Abiotic and Biotic factors, communities, adaptations for hot and cold environments, distribution of organisms, random sampling – quadrats and transects, predator prey, food chains and webs, decomposition, carbon cycle, water cycle.
1, 4, 8, 9 ,10 12 13 14, 27

Variation & Evolution
Year 11
DNA structure, meiosis, human genome project, variation, sex inheritance, genetic inheritance, theories of evolution – Darwin, Larmarck, Wallace. Evidence of evolution, extinction, selective breeding, genetic engineering.
4, 6, 7, 8, 9 10 11, 13 14

Homeostasis & response
Reflex arc, nervous system, eye & brain, menstrual cycle, endocrine system, controlling blood glucose & temperature, fertility, kidney & water balance, homeostasis.
1, 4, 5, 6, 7, 8 ,9, 10 13 14

Bioenergetics
Aerobic respiration, anaerobic respiration, photosynthesis, investigating respiration, plant minerals, factors affecting photosynthesis.
4, 8, 9 ,10 12 14

Infection & Response
Year 10
Communicable disease, health and disease, physical and chemical barriers, the immune system, antibiotics & painkillers, vaccinations, discovery and development of drugs, monoclonal antibodies, plant defences, plant deficiencies.
4, 5, 8, 9, 10, 12, 13 14

Organisations in Animals & Plants
Exchange of substances, the alveoli and gas exchange, the heart, digestive system, the blood and blood vessels, enzyme activity, food tests, cardiovascular disease, transpiration, effects of alcohol & smoking, non-communicable disease.
1, 4, 6, 8, 9, 10, 12,13, 14

Cell Biology
Microscopy, Cell Transport, Osmosis, prokaryotes and eukaryotes, percentage and rate exchange, cell cycle, mitosis, stem cells, specialised cells.
2, 4, 7, 8, 9, 10, 11 ,13, 14, 27

Genes – Inheritance & Evolution
Year 9
Inheritance, variation, natural selection, mutations, DNA structure, selective breeding, fossils, evolution, natural selection, extinction.
2, 4, 6,7, 8, 9, 10, 13, 14

Organisms – Breathing & Digestion
Digestive system, respiration system, enzymes in digestion, breathing, gas exchange, components of food, healthy diet, nutrient deficiency, smoking.
1,4, 8, 9, 12, 27

Ecosystems – Respiration & Photosynthesis
Year 8
Aerobic respiration, photosynthesis, leaf structure, anaerobic respiration.
4, 8, 9, 10, 12m 14

Ecosystems – Interdependance & Plant Reproduction
Flower structure, food chains and webs, fertilisation and germination, seed dispersal, pollination, ecosystems, food chains and webs, competition and adaptation, plant distribution.
1, 4, 8, 9, 10, 13 14

Genes – Human reproduction & variation
Adolescence, fertilisation and implantation, the menstrual cycle, reproductive systems, continuous and discontinuous variation, development of a foetus.
2,4,5,7 8, 9, 10, 14

Year 6 Induction

Intro to Science
Year 7
Fundamental Skills, Table & graph skills
1, 2,8, 9, 10, 11, 12, 14

Organisms – Cells & Movement
Plant and animal cells, observing cells, unicellular organisms, specialised cells, levels of organisation, movement of substances, muscles, skeleton & joints
4, 8, 9, 10, 14

KS5 Biology GH6 Learning Journey

Skills

Knowledge

Year 13
"Are you Fit for FEET?"

Populations & Sustainability
Conservation & Preservation, Limiting Factors, Interspecific & Intraspecific Competition, Lag, Log and Stationary Phase, Cyclic Fluctuations, Timber Production, Conservation Case Studies, Fishing Management
1, 4, 8, 9 ,10 12 13 14, 27

Revision

Future Education, Employment & Training

Ecosystems
Biomass Transfer, Succession, Abiotic and Biotic Factors, Decomposition & Decay, Carbon and Nitrogen Cycles, Random and Systematic Sampling
1, 4, 8, 9 ,10 12 13 14, 27

Cloning & Biotechnology
Natural Clones, Embryo Twinning, Synthetic Biology, Batch & Continuous Processing, SCNT, Microorganisms in Technology, Immobilised Enzymes
4, 6, 7, 8, 9 10 11, 13 14

Patterns of Inheritance
Genotype & Phenotype, Monohybrid & Dihybrid Crosses, Codominance, Chi-Squared test, Hardy-Weinberg Calculation, Epistasis
4, 6, 7, 8, 9 10 11, 13 14

Manipulating Genomes
PCR, Electrophoresis, DNA Profiling, DNA Sequencing, Genetic Engineering, Gene Therapy, Artificial Selection
4, 6, 7, 8, 9 10 11, 13 14

Cellular Control
Transcription Factors, Homeobox Genes, Apoptosis, Translational Control

Respiration
Glycolysis, Cellular Respiration, Mitochondria Structure, Link Reaction
4, 8, 9 ,10 12 14

Hormonal Communication
Endocrine System, Adrenal Gland, Diabetes, Pancreas
1, 4, 5, 6, 7, 8 ,9, 10 13 14

Homeostasis
Cell Signalling, Negative & Positive Feedback, Endotherms & Ectotherms
1, 4, 5, 6, 7, 8 ,9, 10 13 14

Photosynthesis
Links with Respiration, Chloroplast, Photosynthetic Pigments, Light Dependent & Independent Stage of Photosynthesis
4, 8, 9 ,10 12 14

Neuronal Communication
Nervous System, Brain Structure, Synapses, Nerve Impulse
1, 4, 5, 6, 7, 8 ,9, 10 13 14

Plant Responses
Plant Hormones, Seed Germination, Commercial Uses
1, 8 ,9, 10 13 14

Year 13

Year 12
"Introduction to A-Level Mindset"

Biodiversity
Species Richness & Evenness, Sampling, In Situ & Ex Situ Conservation, Simpson's Diversity Index
1, 4, 8, 9 ,10 12 13 14, 27

Classification & Evolution
Classification, Phylogeny, Convergent Evolution, Theories of Selection, Natural Selection
4, 6, 7, 8, 9 10 11, 13 14

Communicable Disease
Pathogens – Virus, Bacteria, Protist & Fungi, Vaccination, Humoral & Cell Mediated Response, Medicine – Antibiotics
1, 4, 5, 8., 9 , 10, 12, 13 14

Transport in Plants
Leaf Structure, Transpiration, Xylem & Phloem, Translocation, Potometer
1, 4, 6, 8, 9, 10, 12,13, 14

Transport in Animals
Circulatory System, Cardiac Cycle, ECGs, Tissue Fluid, Oxygen Dissociation
1, 4, 6, 8, 9, 10, 12,13, 14

Exchange Surfaces
Exchange Surface, Respiratory System, Fish & Insect Gaseous Exchange, SA:V Ratio
1, 4, 6, 8, 9, 10, 12,13, 14

Enzymes
Enzyme Structure, Inhibition, Factors Affecting Rate
1, 4, 6, 8, 9, 10, 12,13, 14

Cell Division, Diversity & Organisation
Specialised Cells, Stem Cells, Mitosis, Specialised Tissue, Meiosis
2, 4, 7, 8, 9, 10, 11 ,13, 14, 27

Nucleotides & Nucleic Acids
ATP, Nitrogenous Bases, DNA Replication
1, 4, 6, 8, 9, 10, 12,13, 14

Cell Transport
Osmosis, Diffusion, Active Transport, Bulk Transport
2, 4, 7, 8, 9, 10, 11 ,13, 14, 27

Year 12

Cell Structures
Prokaryotic & Eukaryotic Cells, Types of Microscopes, Plant and Animal Cells, Microscopy
2, 4, 7, 8, 9, 10, 11 ,13, 14, 27

Biological Molecules
Lipids, Sugars, Qualitative Testing, Proteins
1, 4, 6, 8, 9, 10, 12,13, 14