Belfairs Academy

GCSE Biology Fundamentals Map

Italics are for triple-science only

Knowledge	Skills
ESSENTIAL MATHS Standard form Orders of magnitude Decimal form Significant figures Ratios, fractions and percentages	 Making estimates Visualise and represent 2D and 3D shapes Change the subject of an equation Measure rate of change using the slope of a tangent Transfer data to graphs
CELL BIOLOGY Recognise cell structures, including primitive cells Cell division and differentiation Understanding cancer Stem cells and their uses Cell development Cellular processes *How microorganisms are grown* *Antibiotic testing*	 Investigate animal and plant cells using a light microscope. Investigate disinfectants.
PHOTOSYNTHESIS Photosynthesis Explain what affects rate of photosynthesis How to increase food production Diffusion The role of stomata Explain how plants move water and sugar	 Use a microscope to investigate leaves Investigate the effect of light intensity on photosynthesis Investigate transpiration
MOVING AND CHANGING MATERIALS Water movement Active transport Understand the need for transport systems Enzyme function Digestion Exchange surfaces How plants use minerals The circulatory system, blood and heart. Understand gas exchange. Explain coronary heart disease.	 Investigate osmosis Investigate the effect of pH on amylase Investigate testing of carbohydrates, proteins and lipids
HEALTH MATTERS Explain risk factors for health Non--communicable diseases Bacterial, viral and fungal diseases Malaria The immune system Understand how antibiotics and painkillers work How immunity is developed Understand how new drugs are made *Understand monoclonal antibodies* *Plant diseases and defences*	

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Knowledge	Skills
COORDINATION AND CONTROL The nervous system and reflex actions The endocrine system Controlling blood glucose Understand diabetes and treatments Negative feedback Human reproduction, IVF and contraception Auxins *Homeostasis* *The brain and the eye: seeing in focus and eye defects* *Controlling body temperature* *Water balance and the kidneys* *Kidney failure and treatments* *Applications of auxins and other plant hormones*	Investigate reaction time *Investigate the effect of light and gravity on germinating seedlings*
GENETICS DNA, genes and the human genome Tracing human migration Meiosis Sexual and asexual reproduction Genetics and gene disorders *The structure of DNA* *Proteins and mutations*	Calculate genetic crosses *Explain the importance of Gregor Mendel's experiments*
VARIATION AND EVOLUTION Variation The theory of evolution and natural selection Fossil evidence Antimicrobial resistance Selective breeding Genetic engineering The tree of life Extinction and survival *Speciation* *Cloning*	Evaluate the evidence of natural selection and evolution Consider the ethical considerations of genetic engineering *Understand the impact of the work of Mendel, Darwin and Wallace*
ECOLOGY IN ACTION Abiotic factors Predator-prey relationships and trophic levels Competition for resources Adaptation for survival Cycles of materials and carbon Land use and the landscape Global warming Waste management and pollution Maintaining biodiversity *Transfer of biomass and decay* *Environmental change* *Food scarcity and security* *Using biotechnology*	Investigate population size of a common species in a habitat Using graphs to show relationships *Investigate the effect of temperature on the rate of decay*

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