Year 10 Curriculum Implementation: Science (Biology)

	Autumn	Spring	Summer
Knowledge & Skills	**Cell Biology** • Microscopy – preparing and observing slides • Eukaryotic & Prokaryotic • Cell Specialism • Cell Transport - osmosis and osmosis required practical, diffusion, active transport • Cell Division • Mitosis • Cell differentiation • Cancer & cancer treatment • Stem cells & stem cell dilemmas **Organisation** • Organ systems • Digestive system • Food tests required practical • Enzymes – as catalysts, digestive • Enzymes required practical • Blood & blood vessels • Heart & Circulatory system • Coronary heart disease • Lungs • Metabolism • Non-communicable disease	**Communicable Disease** • Human defences • Preventing infection • Bacterial, viral, protist and fungal diseases • Discovery & development of drugs • Differences between antibiotics & painkillers • Vaccination • Culturing Microorganisms (SS only) • Monoclonal antibodies & their uses (SS only)	**Bioenergetics** • Plant tissues • Photosynthetic reaction • Rate of photosynthesis and required practical • Uses of glucose • Transport systems in plants • Evaporation & Transpiration • Fungal Diseases • Plant Diseases (SS only) • Plant Defences (SS only) • Respiration – aerobic & anaerobic • Response to exercise
Links to prior learning	Year 7 Cells • cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope • the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts • the similarities and differences between plant and animal cells • the role of diffusion in the movement of materials in and between cells • structural adaptations of some unicellular organisms • the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms Year 8 Nutrition & Digestion • content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed • calculations of energy requirements in a healthy daily diet • the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases • the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts) • the importance of bacteria in the human digestive system		Year 9 Photosynthesis • the reactants in, and products of, photosynthesis, and a word summary for photosynthesis • the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere • the adaptations of leaves for photosynthesis Year 8 Health • aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life • a word summary for aerobic respiration • the process of anaerobic respiration in humans and micro-organisms, including fermentation, and a word summary for anaerobic respiration • the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism
Assessment	• Cell structures & microscopes assessment • Osmosis formative assessment • Cells & cell transport assessment • Cell division assessment • Food tests formative assessment • Enzymes & digestion assessment • Heart & circulatory disease assessment	• Infection & response formative assessment • Microbiology formative assessment (SS only) • Infection & response assessment • Year 10 mock exam	• Photosynthesis formative assessment • Plants & photosynthesis assessment • Respiration & gas exchange assessment
Home learning	• Educake • GCSEpod • Past paper exam questions • Reading comprehensions	• Educake • GCSEpod • Past paper exam questions • Reading comprehensions	• Educake • GCSEpod • Past paper exam questions • Reading comprehensions
Cultural Capital and extra-curricular opportunities	• Runshaw more able gifted and talented event • Science Live Manchester	• Year 9/10 trip to Geneva or Iceland	
Literacy	• Key words & definitions • Etymology of keywords • Robert Hooke reading comprehension • Henrietta Lacks reading comprehension • Meristem cells reading comprehension • Stem Cells reading comprehension • Smoking – lung cancer reading comprehension	• Key words & definitions • Etymology of keywords • Semmelweis & germ theory reading comprehension • Defending the body from pathogens guided reading task • Fungal diseases guided reading task • Human defence systems guided reading task • Vaccines guided reading task	• Key words & definitions • Etymology of keywords • Seagrass meadows reading comprehension • Helping us to breathe guided reading task • Photosynthesis guided reading task • Uses of glucose guided reading task

	• Dr Beaumont (digestion) reading comprehension • Exchanging substances guided reading task	• Thalidomide article • Measles article • Anthrax article	
Numeracy	• Converting units • Magnification calculations • Calculating % change • Calculating BMI	• Interpreting data	• Limiting factor graphs • Calculating rates
Careers Information, Education, Advice and Guidance (CEIAG)	• Lab technician • Water & sewerage plant operative • Medical radiographer • Medical practitioner • Dietician • Nurse	• Health & safety officers • Podiatrist	• Personal trainer • Environmental officer
Spirituality	• Empathy and compassion for others • Self awareness • Awe and wonder of the plant kingdom	• Self care and respect for ourselves and our bodies • Respect for the part that people have played in the fight of disease • Empathy for those suffering from disease and those who do not have access to medicine and medical care	• Awe and wonder of the plant kingdom • Respect for the environment
How can parents support the curriculum?	• Encourage use of Congnito Science (if purchased) • Encourage use of Educake • Provide a study area and resources • Encourage students to engage in what they have learned in class independently	• Encourage use of Congnito Science (if purchased) • Encourage use of Educake • Provide a study area and resources • Encourage students to engage in what they have learned in class independently	• Encourage use of Congnito Science (if purchased) • Encourage use of Educake • Provide a study area and resources • Encourage students to engage in what they have learned in class independently