Year 7 Curriculum Sequencing Grid				
Subject:	**Sequence of Units taught in one year**			
Unit	Unit 1 Organisms	Unit 2 Reproduction	Unit 3 Disease	Unit 4 Ecosystems
Key Retainable Substantive Knowledge	- Animal cells & plant cells. - Microscopes - Specialised Animal & Plant Cells. - Levels of Organisation - Cells, Tissues, Organs and System. - Uni-cellular Organisms - Prokaryotic Cells. - Skeleton and Joints - Muscles and Movement	- Adolescence. - Reproductive Systems. - The Menstrual Cycle. - Fertilisation and Implantation. - Development of a foetus. - Flowers and Pollination. - Fertilisation and Germination. - Seed Dispersal.	- Drugs. - Alcohol. - Smoking. - Types of Microbes and Disease. - Spread of Disease. - Fighting Disease. - Preventing Disease. - Treating Disease.	- Habitats. - Food Chains and Webs. - Food Chains, Webs and Pyramids. - Ecosystems. - Competition. - Adapting to Change.
Key Retainable Disciplinary Knowledge	Enquire: use appropriate techniques, apparatus, and materials during laboratory work. Enquire: make and record observations. Communicate: explain the methods you use to observe cells. Solve: use multiplication to calculate magnification.	Predict: make a prediction Enquire: Identify the Independent, dependent and control variables Analyse: present observations and data in tables. Analyse: interpret observations and data to identify patterns and draw conclusions. Communicate: construct explanations and communicate your findings Solve: calculate a mean	Enquire: make predictions using scientific knowledge Enquire: compare reaction times of the class during a ruler drop Analyse: plot graphs, including lines of best fit. Conclude table of results and evaluate. Enquire: use appropriate methods during laboratory work Analyse: present observations and data using tables.	Math Skills: Introducing the bar method of percentages used in maths, this task has a range of difficulties which challenge students to calculate the energy in either Producer consumer or prey. A written description of how the energy is moved through these organisms is available as an extension.
Key Tier Three Vocabulary	amoeba, antagonistic muscle pair, bone, bone marrow, cartilage cell, cell membrane, cell wall, chloroplast, circulatory system, concentration, cytoplasm, digestive system, euglena, flagellum, , joints, leaf cell, ligaments, microscope, mitochondria multi-cellular (organism), muscular skeletal system, nerve cell, nucleus, organ, organ system, red blood cell, reproductive system, respiration, respiratory system, root hair cell, skeleton, specialised cell, sperm cell, structural adaptations (of cells), tendons, tissue, uni-cellular (organism), vacuole	adolescence, amniotic fluid, cervix, condom, contraception, contraceptive pill, discontinuous variation, egg cell, ejaculation, embryo, fertilisation, fetus, gestation, implantation, menstrual cycle (period), menstruation , ovary, oviduct (fallopian tube, ovulation, penis, placenta, puberty, reproductive system, scrotum, semen, sex hormones, sexual intercourse, sperm cell, sperm duct, testicles (testes), umbilical cord, urethra, uterus (womb), vagina, anther, carpel, fertilisation, filament, fruit, germination, ovary, ovule, petal, pollen, pollination, seed, seed dispersal, sepal, stamen, stigma, style	addiction, alcoholic, alveolus, antibiotic, asthma, bacteria, deficiency depressant, drug, ethanol, fungi, lungs, medicinal drug, micro-organisms passive smoking, recreational drug, resistance, stimulant, unit of alcohol villi, virus, withdrawal symptoms	bioaccumulation, community, competition, consumer, decomposer ecosystem, environment, food chain , food web, habitat, interdependence niche, population, predator, prey, producer
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant,	Textbooks, revision guides, news articles etc as relevant,	Textbooks, revision guides, news articles etc as relevant, .	Textbooks, revision guides, news articles etc as relevant
Authentic Connections – Cross Curricular Links		Life Skills: Contraception puberty and sexual health Maths: Using formula and data interpretation for Chemistry over Atomic Structure	Life Skills: The effects of alcohol/ drug abuse and smoking	Geography: Links between deforestation, climate change

Key Assessments				

Year 8 Curriculum Sequencing Grid				
Subject:	**Sequence of Units taught in one year**			
Unit	Unit 1 - Organisms	Unit 2 - Bioenergetics	Unit 3 - Genes	
Key Retainable Substantive Knowledge	Nutrients and healthy diet Food tests 1 Food tests 2 Unhealthy diet and disease Digestion Enzymes and digestion Enzymes Breathing and lung structure Gas Exchange Blood and circulation The heart	Aerobic respiration Anaerobic respiration Response to exercise Photosynthesis Leaves Investigating photosynthesis 1 Investigating photosynthesis 2 Plant minerals	Variation - inherited or environmental Continuous and discontinuous Charles Darwin Natural selection Extinction DNA Inheritance Selective breeding Genetic modification	
Key Retainable Disciplinary Knowledge	**Enquire**: use appropriate techniques, apparatus, and materials during laboratory work. **Enquire**: make and record observations. **Communicate**: explain the methods you use to test foods for starch, sugar, fats and proteins. **Enquire**: Identify the Independent, dependent and control variables **Analyse**: present observations and data in tables. **Analyse**: interpret observations and data to identify patterns and draw conclusions. **Analyse**: To be able to use your results to prove or disprove a hypothesis **Communicate**: construct explanations and communicate your findings **Solve**: calculate a rate of reaction **Solve**: Calculate a mean	**Enquire:** Plan an investigation and identify independent, dependent, and control variables. **Enquire:** Form a hypothesis using your scientific knowledge **Enquire:** make and record observations and data in tables **Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Analyse:** evaluate data, showing awareness of potential sources of random and systematic error. **Maths Skills** Use results to calculate a mean. Accurately reading scales measuring volumes. Graph construction and interpretation. **Analyse:** present observations and data in tables. **Analyse:** interpret observations and data to identify patterns and draw conclusions. **Communicate:** present reasoned explanations in relation to your prediction and hypothesis. **Maths Skills** Graph construction and interpretation. **Communicate:** use scientific terminology when explaining observations for your experiment. **Maths Skills** Reading scales, measuring volumes Accurately measuring distances & times.	**Analyse:** present data and analyse patterns **Analyse:** discuss limitations and draw conclusions **Solve:** describe role of evidence in supporting theories **Solve:** describe the consequences of habitat changes to the grove snails **Solve:** judge the reliability of a source **Communicate:** critique claims and justify your opinions. Enquire: Perform practical to model DNA to make a 3D double helix using paper (or sweets).	

Key Tier Three Vocabulary	Alveolus, anus, asthma, balanced diet, bile, breathing, bronchiole, bronchus, carbohydrase, carbohydrate, catalyst, condense, contract, deficiency, diaphragm, dietary fibre, digestion digestive system, enzyme, exhale, food test, gas exchange, gullet, gut bacteria, hypothesis, inhale, large intestine, lipase, lipid, lungs, lung volume, malnourishment, mineral (biology) nutrient, obese, protease, protein, rectum, respiration, respiratory system, ribs, small intestine, starvation, stomach , trachea, villi, vitamin	Aerobic respiration, algae, anaerobic respiration, biotechnology, chlorophyll, deficiency, fermentation, fertiliser, haemoglobin, iodine magnesium, nitrates (biology), oxygen debt, phosphates, photosynthesis, plasma, potassium, producer stomata	Allele, biodiversity, captive breeding, chromosome(s), competition conservation, DNA, dominant (allele), endangered species, evolution, extinct, fossil, gene, gene bank, genetic modification, inherited characteristic(s), mutation, natural selection, peer review, population, Punnett square, recessive	
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant	Textbooks, revision guides, news articles etc as relevant	Textbooks, revision guides, news articles etc as relevant	
Authentic Connections – Cross Curricular Links	**Physics**: Conservation of energy, energy from respiration is transferred or released. **Chemistry**: How catalysts speed up the rate of reaction. How can temperature, pH, concentration affect the rate. **Physics**: Increasing the kinetic energy increases the frequency of successful collisions.	**PE**: Students can explore the concept of aerobic and anaerobic respiration during physical activity, such as the different energy systems (aerobic vs anaerobic) used during exercise. This also links to topics like muscle fatigue, lactic acid buildup, and recovery after exercise. **Maths**: Quantifying energy expenditure and calculations related to energy production, such as the rate of respiration or energy released during different activities. **Geography**: Students can link the concept of photosynthesis to climate and the role of plants in carbon capture and oxygen production, especially when studying ecosystems or global environmental issues like climate change.	**Maths**: Graphing, probability, statistical analysis, genetic ratios, and mathematical models of inheritance. **Geography**: Adaptation of species to environments, extinction, biodiversity, and agricultural practices. **History**: Darwin's work, the history of genetics, and extinction events. **Ethics/Philosophy**: Debates on the ethical implications of genetic modification and selective breeding.	
Key Assessments				

Year 9 Curriculum Sequencing Grid			
Subject:	**Term One**	**Term Two**	**Term Three**
Unit	Unit 1 Cells	N/A	Unit 2: Organisation
Key Retainable Substantive Knowledge	Cells Microscopes Magnification calculations Specialised cells Prokaryotic and eukaryotic cells Diffusion Osmosis Active Transport Mitosis Stem cells		Tissues and Organs The digestive system Chemicals in food Food tests 1 Food tests 2 Enzymes Enzymes in digestion Enzymes and pH investigation Blood Circulatory system The heart Heart disease The respiratory system Gas Exchange Leaf structure Xylem & phloem Stomata and Transpiration Factors affecting the rate of transpiration
Key Retainable Disciplinary Knowledge	**Practical Competencies** **Enquire:** make and record observations. **Enquire:** plan and design investigations and experiments to make observations and to test predictions. **Solve:** assess risk **Enquire:** use appropriate experimental methods. **Communicate:** construct explanations and communicate your findings. **Enquire:** make predictions using scientific knowledge **Enquire:** use appropriate methods during laboratory work **Analyse:** present observations and data using tables.		Enquire: Use qualitative reagents to test for a range of carbohydrates, lipids, and proteins. To include: Benedict's test for sugars; iodine test for starch; and Biuret reagent for protein. Enquire: Use of qualitative reagents to identify biological molecules. Analyse: Safe use of a Bunsen burner and a boiling water bath. Enquire: make predictions using scientific knowledge Enquire: use appropriate methods during laboratory work Analyse: present observations and data using tables. Enquire: plan and design investigations and experiments to make observations and to test predictions. Enquire: use appropriate experimental methods. Enquire: make and record observations. Analyse: interpret observations and data to identify patterns and draw conclusions. Analyse: evaluate data and discuss limitations.

			Communicate: construct explanations and communicate your findings. Communicate: pay attention to objectivity and critique claims. Solve: assess risks.
Key Tier Three Vocabulary	Eukaryotic, Prokaryotic, organelle, Nucleus Cytoplasm, Cell membrane, Mitochondria, respiration, Ribosomes, Chloroplasts, chlorophyll, photosynthesis, Vacuole, Differentiation, Mitosis, Stem cell, Diffusion, Osmosis, Active transport, adult stem cells, cell cycle, cloning, differentiate, embryonic stem cells, mitosis, chromosome, stem cells, cloning, zygote		Enzyme, Carbohydrase, Amylase, Protease, lipase, Lipids, Bile, Emulsify, denature, Xylem, Phloem, Meristem, Stomata, Guard cells, Spongy mesophyll, Palisade mesophyll, Evaporate, Transpiration, Translocation, Epidermal tissues, Aorta, Vena cava, Pulmonary artery, Pulmonary vein, Atrium, Ventricle, Coronary Artery, Valves, Artery, Vein, Lumen, Capillary, Coronary heart disease (CHD), Stents, Statins, Risk factor, Benign tumour, Malignant tumour
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant		Textbooks, revision guides, news articles etc as relevant
Authentic Connections – Cross Curricular Links	LifeSkills: Stem cell uses and ethic History: Robert Hook the Microscope		LifeSkills: Effect of smoking and alcohol on the body, obesity. Impact of CHD.
Key Assessments			

Year 10 Curriculum Sequencing Grid			
Subject:	**Term One**	**Term Two**	**Term Three**
Unit	Organisation	Infection	Bioenergetics
Key Retainable Substantive Knowledge	Tissues and Organs The digestive system Chemicals in food Food tests 1 Food tests 2 Enzymes Enzymes in digestion Enzymes and pH investigation Blood Circulatory system The heart Heart disease The respiratory system Gas Exchange Leaf structure Xylem & phloem Stomata and Transpiration Factors affecting the rate of transpiration	Introduction to pathogens. Pathogens and How They Spread Treating Pathogens Bacteria, Disease Viral Disease Protozoa & fungus Primary Defences Immune System Vaccines Antibiotics and Pain Killers (Triple) Culturing Bacteria - Planning (Triple) Culturing Bacteria - Practical Drug Development (Triple) Monoclonal Antibodies Plant Diseases and Defences Non-Communicable Diseases Smoking Diet	Photosynthesis Uses of Glucose Testing a leaf for starch Limiting factors of photosynthesis Limiting Factors graphs Photosynthesis require practical Greenhouses Aerobic respiration Aerobic respiration and exercise Anaerobic respiration and exercise Anaerobic respiration in other organisms Metabolism
Key Retainable Disciplinary Knowledge	Enquire: Use qualitative reagents to test for a range of carbohydrates, lipids, and proteins. To include: Benedict's test for sugars; iodine test for starch; and Biuret reagent for protein. Enquire: Use of qualitative reagents to identify biological molecules. Analyse: Safe use of a Bunsen burner and a boiling water bath. Enquire: make predictions using scientific knowledge Enquire: use appropriate methods during laboratory work Analyse: present observations and data using tables. Enquire: plan and design investigations and experiments to make observations and to test predictions. Enquire: use appropriate experimental methods. Enquire: make and record observations. Analyse: interpret observations and data to identify patterns and draw conclusions. Analyse: evaluate data and discuss limitations. Communicate: construct explanations and communicate your findings. Communicate: pay attention to objectivity and critique claims.	Analyse – Determine the cause of some known diseases from the acquisition of knowledge of the four types of pathogens – Protozoa, Fungus, Bacteria, Virus Link between environment and disease: Understanding why certain conditions (e.g., natural disasters) increase the risk of communicable diseases. Critical thinking: Ability to apply preventive measures and assess the effectiveness of different approaches in controlling disease spread Analyse – Determine the cause and treatment of specific diseases from the acquisition of knowledge of the four types of pathogens – Protozoa, Fungus, Bacteria, Virus Application: use appropriate methods during class work, paying attention key words and definitions to explain how and why to reduce the spread of malaria. Maths/Graph Skills – Students to produce and understand the graphical data which shows antibody production resulting in immunity. Practical Competencies	Practical Competencies Enquire: Use qualitative reagent to test for starch. Use iodine to test for starch Enquire: Use of qualitative reagents to identify biological molecules. Analyse: Safe use of a Bunsen burner and a boiling water bath. Safe use of ethanol. Maths skills- Interpreting graphs Enquire: make a Hypothesis predictions using scientific knowledge Enquire: plan and design investigations and experiments to make observations and to test predictions. Enquire: use appropriate experimental methods. Enquire: make and record observations. Analyse: present observations and data in tables. Analyse: interpret observations and data to identify patterns and draw conclusions Analyse: present observations and data in tables. Analyse: interpret observations and data to identify patterns and draw conclusions. Communicate: construct explanations and communicate your findings. Analyse: evaluate data and discuss limitations.

	Solve: assess risks.	Enquire: use appropriate methods during laboratory work, paying attention to health and safety. Enquire: make and record observations and data in tables. Maths Skills – calculate the area of a circle which shows where antibiotics killed bacteria Enquire: use information to build an understanding of the drug development stages and their uses.	Communicate: construct explanations and communicate your findings. Enquire: test the hypothesis showing the effect of temperature on the rate of fermentation
Key Tier Three Vocabulary	Enzyme, Carbohydrase, Amylase, Protease, lipase, Lipids, Bile, Emulsify, denature, Xylem, Phloem, Meristem, Stomata, Guard cells, Spongy mesophyll, Palisade mesophyll, Evaporate, Transpiration, Translocation, Epidermal tissues, Aorta, Vena cava, Pulmonary artery, Pulmonary vein, Atrium, Ventricle, Coronary Artery, Valves, Artery, Vein, Lumen, Capillary, Coronary heart disease (CHD), Stents, Statins, Risk factor, Benign tumour, Malignant tumour	Pathogen, virus, bacteria, protist, fungus, white blood cell, phagocyte, lymphocyte, agar plate, microorganism, antigen, antibody, anti-toxin, antibiotic, painkiller, disinfectant, antibiotic, monoclonal antibody, hybridoma. Vaccine, placebo, blind trial, double blind trial, herd immunity.	endothermic reaction, glucose, starch, Cellulose, limiting factors, photosynthesis, rate aerobic respiration, anaerobic respiration, exothermic reaction, glycogen, lactic acid, oxygen debt
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant	Reading – opportunity to apply reading strategies to determine how pathogens spread (lesson 1)	Textbooks, revision guides, news articles etc as relevant
Authentic Connections – Cross Curricular Links	LifeSkills: Effect of smoking and alcohol on the body, obesity. Impact of CHD.	Food tech: Knowledge about food hygiene and preventing the spread of pathogens from food. History: The history of the vaccine and Edward Jenner	PE: effect of exercise on the body.
Key Assessments			

Year 11 Curriculum Sequencing Grid			
Subject:	**Term One**	**Term Two**	**Term Three**
Unit	Unit 5: Homeostasis	Unit 6: Inheritance, variation and evolution	
Key Retainable Substantive Knowledge	What is homeostasis? Nervous System Reflexes Reaction Times required practical x2 The Brain (triple only) The Eye (triple only) Endocrine System Glucose regulation & diabetes Negative Feedback (HT) Menstrual Cycle Contraception Infertility (HT) Regulation of Temperature (triple only) Waste Products (triple only) Kidney Function (triple only) Kidney Failure (triple only) Plant Tropism (triple only) Germination required practical x2	sexual and asexual reproduction. Meiosis (Triple) Reproduction of fungi, plants and parasites. DNA and the Human Genome. (Triple) Protein Synthesis (Triple) Gene Expression and Mutation Genetic Inheritance Punnett Squares. Genetic Disorders and pedigree charts Screening for genetic disorders Variation Selective Breeding1 Genetic Engineering (Triple) Cloning Evolution Evidence for evolution Extinction Evolution of Bacterial resistance (Triple) Speciation Classification	
Key Retainable Disciplinary Knowledge	Enquire: plan and design investigations and experiments to make observations and to test predictions. Solve: assess risks. Enquire: use appropriate experimental methods. Enquire: make and record observations and data in tables. Communicate: construct explanations and communicate your findings. Analyse: present observations and data using tables. Analyse: plot graphs, including lines of best fit. Analyse: interpret observations and data Communicate: construct explanations and communicate your findings. Analyse: present observations and data using tables. Analyse: interpret observations and data	Enquire: use appropriate experimental methods. Enquire: make and record observations. Analyse: interpret observations and data to identify patterns and draw conclusions. Analyse: evaluate data and discuss limitations. Communicate: construct explanations and communicate your findings. Communicate: pay attention to objectivity and critique claims. Solve: assess risks.	
Key Tier Three Vocabulary	central nervous system (CNS), cerebral cortex, cerebellum, ciliary muscles, coordination centres, effectors, homeostasis, hyperopia, medulla, motor neurones, myopia, nerve, neurones, receptors, reflex arcs, reflexes, sensory neurone, stimuli	alleles asexual reproduction bases (DNA) carriers cystic fibrosis dominant allele genetic engineering genotype heterozygote homozygote meiosis mutation natural selection nucleotide phenotype polydactyly Punnett quare diagram recessive sex	

	suspensory ligaments, ADH, adrenaline, auxin, contraception, endocrine system, follicle stimulating hormone (FSH), gibberellins, glucagon, gravitropism, Hormones, insulin, oestrogen, ovaries ovulation, phototropism, pituitary gland, Testosterone, tropism, type 1 diabetes, type 2 diabetes, dialysis, selective reabsorption, thermoregulatory centre, vasoconstriction, vasodilation	chromosomes sexual reproduction mutation natural selection selective breeding tissue culture archae classification domain evolutionary trees extinction speciation species	
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant	Textbooks, revision guides, news articles etc as relevant	
Authentic Connections – Cross Curricular Links	Lifeskills: Menstrual cycle, hormones and contraception choices. Biology IVF debate.	Ethics: Natural selection and the conflict with religion. STEM Opportunitiess and guest speakers	
Key Assessments			