Curriculum Co	ontent Map												
Month		September		Term 1 October November		December January		Term 2 February March		April May		Term 3 June July	
		_					B4 Organising animals and plants part 1 and 2		B5 Communicable diseases B6 preventing and treating diseases	B7 Non-communicable diseases	B8 Photosynthesis B9 Respiration	B9 Respiration	B10 The Nervous System
	Units of Work		B1 Cell Structure and Transport	B1 Cell Structure and Transport B3 Organisation and the digestive system	B3 Organisation and the digestive system (cont.)	B2 Cell division							
Cultural Transmission	National Curriculum area – KS4			Cell biology Nutrition and digestion Transport systems	Cell biology Transport systems	Cell biology	Transport systems Gas exchange systems	Health, disease, and the development of medicines	Health, disease, and the development of medicines	Health, disease, and the development of medicines	Photosynthesis	Cell biology	Coordination and control
	Substantive Knowledge Ni	The What!	development of microscopy techniques, particularly electron microscopy, has enabled scientists to investigate the sub-cellular structures. Students will be able to differentiate between animal and plant cells, differentiate between eukarycic and prokarycic cells, and identify adeptations of specialised animal and plant cells.	material into and out of cells by dffusion, comosis, and antive transport. It is important that students understam that in diffusion material moves with a concentration gradent (from an area of high concentration); in active transport material moves against a concentration gradent (from an area of low concentration); and that concentration or an area of low concentration to an area of high concentration); and that comosis is the movement of water across a	epithelial tissue, which digests food (especially protein). In studying chemical digestion, students should recognise carbohydrates, proteins, and lipids as large molecules that need to be digested, and be able to name the molecules they are broken down into. Students will be familiar with enzyme action	division and after finishing the chapter should be able to describe the three overall stages of the cell cycle. Students will develop have an understanding of milosis as a stage within the cell cycle, but do not need to know about the cell cycle, but do not need to know about the different phases of the milosis stage. They should be able to state the genetic material with the nucleus is doubted before the cell divides into many control of the cell of the cel	recognise the components of blood, describe their functions, and summarise the process blood dotting. They should recognise the three main types of blood vessel, link their structures with their functions, and understand the importance of a double circulatory system. In studying plant tissues and organs, students should be familiar with the different plant tissues and their functions. They should recognise plant organs such as a leaf. They should understand that the roots, stem, and leaves form a plant organ system for transport of substances around the plant. They should be able to state the functions of syfem and pholem tissue. In studying transpiration, they should understand the function of stomata and recognise factors that affect transpiration rate.	(as a state of physical and mental well-being) is affected by communicable (infectious) diseases. They will look at the different pathogens that can cause communicable disease, including bacteria, viruses, and protists, and how these can be spread between organisms – both animals and plants. As part of this, they will look at the development of simple hygiene methods to prevent the spread of pathogens as well as the isolation of individuals who are infected, the destruction of or control of vectors, and the use of vaccination. Students will be able describe the different pathogens, the symptoms and treatments of a range of different animal and plant diseases, and the different defence mechanisms of the human body and plants. They should also	plantogens as well as by insects. I hely should also know that plants can be damaged by a range of ion deficiency conditions. I many of ion deficiency conditions. I was a second to the conditions of disease by vaccination and know how the immunue system works and what is meant by an antigen. The concepts of her dimmunuity will be understood, along with the concept of long term immunuity when memory cells remain in the body. Students will study the use of antibiotics and parishillers to treat disease and will be aware of how during that are effective and safe are made including the united for and safe are made including the concept of safe and safe are made including the concept of safe and safe are made including the concept of safe and safe are made including the concept of safe and safe are made including the concept of safe and safe are made including the concept of safe and safe are made including the concept of safe and safe are made including the concept of safe and safe are safe and safe are concept of safe and safe are safe and safe are concept of safe and safe are safe and safe are concept of safe and safe are safe and safe and safe are	to carcinogenic sources and the effects of ionising radiation	plants and algae as well as the adaptations of leaves to achieve maximum efficiency in photosynthesis. Students will understand the concept of limiting factors and will explain how the use of preenhouses and their monitoring and manipulation can lead to achieving the highest rate for photosynthesis and the economics of this. Students will learn the fate of glucose: its use in respiration and	and the adaptation of the mitochondrion for aerobic respiration. They will be able to describe respiration as the release of energy from food. The production of ethanol during the anaerobic respiration of yeast. Students will understand how we can measure	Students will understand the structure and function of the human nervous system and will learn how this is linked to homeostasis. They will understand how the reflex actions are to keep us safe and how the nervous system relates to the brain. In this topic, there is a particular focus on the structure of the eye and the medical conditions of the eye and the structure of the structure of the system than the structure of the system of the eye and how they can be treated, with the use of lenses.
	Disciplinary knowledge	The How!	able to transpose. Use of a light microscope to observe, draw, and label a selection of plant and animal cells. A scale magnification will be included.	solutions on plant tissue required practical. Measurement of quantities including mass and length Use of model cells to investigate the movement of water and other substances	include: Benedict's test for sugars; iodine test	correctly and following safety rules and aseptic techniques. Students will debate the use and misuse of stem cells in therapeutic cloning.	describe the processes of ventilation and gas exchange and the difference in Students should be able to use simple compound measures such as rate and carry out rate calculations for blood flow. Students will watch a demonstration of a dissection of the heart	Sampling as applied to scientific data, including epidemiological data. Bacteria will be grown in a nutrient broth solution or as colonies on an agar gel plate. Uncontaminated cultures or microgranisms will be used for investigating the action of disinfectants and antibiotics on bacterial growth as a core practical. Students should be able to describe how to prepare an uncontaminated culture using aseptic technique.	Analysis of data on plant growth to write conclusions using scientific knowledge. Evaluation of the use of monoclonal antibodies in treating cancer compared to other treatments.	information between graphical and numerical forms; and extract and interpret information	investigations into the rate of photosynthesis and should be able to explain graphs of photosynthesis rate and draw simple conclusions from data. Use of the inverse square rule and use inverse proportion. Use of data to comment on the cost-	manipulating glassware in the laboratory to collect reliable and reproducable data. Interpreting graph shapes	Calculating percentage change The ethical use of human subjects in experiments the use of frequency diagrams to monitor body temperature Calculation of means and identifying anomalous data and improving accuracy of results Measurement of reaction times use of models of the eye to understand structure calculation of lens strength and the use of reciprocals
	Sequencing (Flow)	Retrieval & Extension	8.2 Cells 9.2 Plant Reproduction 10.2 Human reproduction 8.3 Breathing 8.4 Digestion	8.1 Movement 8.2 Cells 9.2 Plant Reproduction 10.2 Human reproduction 8.3 Breathing 8.4 Digestion 9.4 Photosynthesis	5.1 The Particle Model 8.3.1 Breathing 8.3.5 Smoking	8.1 Movement 8.2 Cells 9.2 Plant Reproduction 10.2 Human reproduction 8.3 Breathing 8.4 Digestion 9.4 Photosynthesis	8.2 Cells	8.2 Cells 10.3 Evolution 10.4 inheritance	8.1 Movement 8.2 Cells	8.3 Breathing 8.4 Digestion	9.4 Photosynthesis	9.3 Respiration 6.3 Types of reaction 6.4 Chemical energy	8.2 Cells 8.3.3 Drugs 8.3.4 Alcohol
	Summative Assessment		Examination questions homework	Examination questions homework	Examination questions homework	Examination questions homework AP1 full examination question paper - range of multiple choice, recall and longer answer questions.	Examination questions homework	Examination questions homework	Examination questions homework AP2 full examination question paper - range of multiple choice, recall and longer answer questions.	Examination questions homework	Examination questions homework	Examination questions homework	Examination questions homework AP3 full examination question paper - range multiple choice, recall and longer answer questions.
Personal Empowerment	Link to Virtue Virtue	The apportunity to reflect, think deeply and critically about an issue.	Friendliness and Civility	Justice & Truthfulness	Courage	Generosity	Gratitude	Good Speech	Good Temper & Humour	Self-Mastery	Self-Mastery	Compassion	Good Sense
			Students will work with friendliness and civility within groups to investigate cell types, cell specialisation and transport.	Students will work in groups of 4 to research tissues in each of the organs and will decide which is the most important organ and justify why they think that.	Students will carry out enzyme reactions and demonstrate the virtue of courage by challenging the data collected and therefore describe the trends seen in enzyme catalysed reactions.	students will look at cell division and the use of stem cells in research with a link to how individuals can be seffless and generously donate tissue to biological studies.		Students will be using key terminology and good speech when describing how diseases are transmitted and treated.	B6 Students will need to demonstrate good temper and good humour when investigating how diseases can be prevented especially with STIs as this is generally a topic that they find difficult to discuss.		are the two main biological pathways that provide the energy required for all living	biological systems in terms of the carbon	B10 Students will develop and understanding of how senses are used within the body. Students will be carryin out investigations on living subjects and will have to use good sense to prevent injury or distress
Preparation for Work	Skill	Transferable skills	Listening	Leadership	Problem-Solving	Creativity	Staying Positive	Speaking	Staying Positive	Aiming High	Aiming High	Speaking	Teamwork
	Link to Skill			Students will <u>lead</u> their learning to ensure they are secure in building on previous knowledge.		Students will be creating diagrams of cells that they have observed using a microscope	Students will understand the problems associated with using Earth's resources and will find positive solutions to these problems.	Students will be using key terminology and good speech when describing how diseases are transmitted and treated. They will describe the problems and solutions linked to obtaining and using		Students will aiming high to prevent illness in themselves by educating themselves about non-communicable diseases, some of which are preventable.	Students will aiming high to prevent illness in themselves by educating themselves about non-communicable diseases, some of which are preventable.	In biology students will use their speaking skills, with the correct terminology to describe the process of aerobic respiration.	In biology, students will be carrying out practical activities while working in team
Preparation for Citizenship	SMSC & British Values	opinions on tissues											
	Link to SMSC & British Values	Developing curen											