Curriculum Map

Subject: Combined Science (Biology) **Year Group: 10**

	Autumn 1/Autumn 2	Autumn 2	Autumn 2/Spring 1	Spring 2	Summer 1	Summer 2
Content	**1 Review Year 9 Topics** **2 Cell Structure & Transport** Structure of Eukaryotes and prokaryotes -Animal and plant cells -Cell specialisation -Cell differentiation -Microscopy --Transport in cells via; -Diffusion -Osmosis -Active transport	**Cell Division** Cell division and chromosomes -Mitosis and the cell cycle -Stem cells	**Organisation and Digestion** The principles of organisation -The structure and function of the human digestive system, including the role of enzymes	**Organisation of Animals and Plants** The structure and function of the heart, blood vessels and blood -The causes and treatments of coronary heart disease -Structure and function of plant tissues and organs, including xylem and phloem	**1 Respiration** -Aerobic respiration - Anaerobic respiration - Fermentation - Response to exercise - Metabolism **2 Communicable Diseases** Communicable diseases: how viral, bacterial, fungal and protist diseases are spread, with specific examples of named diseases, their symptoms and treatment. - Human defense systems: non specific defense and the role of white blood cells against pathogens	**Preventing & Treating Disease1** -Vaccination and its role in the prevention of illness -Antibiotics and painkillers: An understanding of the use of antibiotics and why they won't kill viruses -Discovery and development of drugs: Sources of drugs and how clinical trials are conducted to test for toxicity, efficacy and dose
Skills	Practical Experiments 1.Use a light microscope to observe, draw and label a selection of		Practical & Equation application 1.Develop an understanding of	-Develop an understanding of size and scale - Use models to explain scientific		Evaluate medical treatments. - Consider ethical issues relating to biology topics. -

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	plant and animal cells. 3.Investigations to observe and measure the process of osmosis. 3.Plan experiments to test hypotheses.		size and scale 2.Use models to explain scientific ideas. 3.Observing and drawing specimens seen under a microscope	ideas. -Observing and drawing specimens seen under a microscope. - Evaluate risks of treatments of diseases. - Translate information between graphical and numerical forms, construct and interpret frequency tables and diagrams, bar charts and histograms, and use a scatter diagram to identify a correlation between two variables. - Understand the principles of sampling as applied to scientific data. - Process data from investigations to find arithmetic means, understand the principles of sampling and		Extract and interpret information from charts, graphs and tables - Use appropriate apparatus to

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				calculate surface areas and volumes.		
Key questions	What are the structures of prokaryotic and eukaryotic cells? How do diffusion, osmosis and active transport work in cells and why are these processes so important?	What is the role of chromosomes? How does mitosis work? What is differentiation and how is it different in animal and plants? What are stem cells and how might they be used in medical techniques? What ethical dilemmas are associated with some new therapies involving stem cells and cloning?	How does the digestive system work? What are the basic structures of some of the components of food suh as carbohydrates and lipids? What are catalysts and how do enzymes work? What factors affect enzymes?	How are substances transported around our body? What are the different component of blood? What are the structures of the different types of blood vessel? How does the heart work and what can be done to help it when things go wrong? How does gas exchange happen? What are the main tissues and organs in plants, and how do plants transport the materials they need? What is transpiration?	1 What is aerobic respiration and why is it so important? What is anaerobic respiration and why is it important? What is metabolism? 2 What makes us ill? What are communicable diseases? What is the difference between bacteria and viruses? How do pathogens spread? How can we prevent infection? What does our body do to defend us against infection by pathogens?	What are vaccines? How do medicines work? Why is treating the symptoms not the same as curing the disease? Where do medicines come from and how are new ones developed?
Assessment	Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods:		Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods:		Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods:	

	Autumn 1/Autumn 2	Autumn 2	Autumn 2/Spring 1	Spring 2	Summer 1	Summer 2
	Quiz Homework task Microsoft Forms short tests In class short tests Questions and answer sessions Spelling tests Group work tasks Peer assessments Literacy and numeracy activities End of term summative assessments		Quiz Homework task Microsoft Forms short tests In class short tests Questions and answer sessions Spelling tests Group work tasks Peer assessments Literacy and numeracy activities End of term summative assessments		Quiz Homework task Microsoft Forms short tests In class short tests Questions and answer sessions Spelling tests Group work tasks Peer assessments Literacy and numeracy activities End of term summative assessments	
Literacy/ Numeracy/ SMSC/ Character	Literacy -Higher tier vocabulary on Cells -Develop extended answers through practice of 6 mark questions. -Development of comprehension skills through research using a variety of sources. Numeracy -Understanding of size and scale -Analysis of numerical data when considering risk factors -Interpretation of graphs e.g. scatter graphs to identify correlations		Literacy -Higher tier vocabulary on specific diseases. -Develop extended answers through practice of 6 mark questions. -Development of comprehension skills through research using a variety of sources. Numeracy -Understanding of size and scale -Analysis of numerical data when considering risk factors -Interpretation of graphs e.g.	Literacy -Appropriate use of tier three vocabulary. -Develop extended answers through practice of 6 mark questions. -Plan experiments or devise procedures to make observations -Development of comprehension skills through research using a variety of sources. Numeracy -Calculating means -Calculating rates -Translating	Literacy -Appropriate use of tier three vocabulary. -Develop extended answers through practice of 6 mark questions. -Development of comprehension skills through research using a variety of sources. -Plan experiments or devise procedures to make observations Numeracy -Calculating means -Translating numerical data into graphical forms -Interpretation of graphs e.g. scatter graphs to identify correlations -Calculating cross sectional areas SMSC -Evaluating use of medical treatments -Sensitivity to others when discussing topics such as diseases -Discussion of ethical issues

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			scatter graphs to identify correlations SMSC -Evaluating lifestyle choices -Sensitivity to others when discussing topics such as diseases -Evaluating which treatments should be available on the NHS Character -Tolerance - Showing tolerance to other people and their lifestyle choices	numerical data into graphical forms SMSC -Safe and ethical use of humans and living organisms in scientific investigations Character -Confidence - Building confidence in practical skills with the completion of a required practical. Resilience & Initiative - Resolving difficulties in practical techniques	surrounding drug testing Character -Tolerance - Showing tolerance to other people and their choices regarding medical treatments	