

Medium Term Plan 2021/2022 Subject: Science Term: AT1 Topic from LTP: BTEC – Biology Cells, Organs and Genes Lessons per week: 3 Group(s): Wood 4X

Students will show achievement by being able to understand the parts and workings of the cell and how specialised cells are adapted. They will also be able to explain how cells make up organ systems such as the cardiovascular system. Practical tasks such as using a microscope encourage independence. The power point presentations will link to communication. Group work is a vital part of this unit to share their ideas. Learning about the different genetic diseases links to health and wellbeing.

	Topic	Learning Intentions	Task	Assessed LIs
W1	Cells	<ul style="list-style-type: none"> • Students should be able to label the parts of eukaryotic cells and know their functions • They should know how specialised cells are adapted to do different jobs and can describe the function of eight of these cells • Students will be able to use and label a microscope 	<ul style="list-style-type: none"> • Students will create a model of the cell and label the functions and adaptations of parts of the cell • Students are to create a poster or clicker 7 board to show their knowledge of specialised cells labelling the poster with the function and adaptation of these cells • Students will look at cells under a microscope and label parts of a microscope 	I can <ul style="list-style-type: none"> • Label the parts of eukaryotic cells and know their functions • Explain how specialised cells are adapted to do different jobs • Describe the function of eight of these cells
W2	Organ systems -	<ul style="list-style-type: none"> • Students should know that cells make tissues that make organs and organs work together to form organ systems such as the cardiovascular system 	<ul style="list-style-type: none"> • Students will look at their cheek cells under a microscope • Detailed drawing or clicker 7 board of the cardiovascular system Students will look at the parts of a 	I can <ul style="list-style-type: none"> • Show that cells make tissues that make organs and organs work together to form organ systems such as the cardiovascular system

		<ul style="list-style-type: none"> • They should know the function of at least four plant organs • They should know that the loss of water from the leaves drives transpiration 	<p>chicken leg or heart and see the tissues and muscles</p> <ul style="list-style-type: none"> • Labelling of plant organs along with their functions • Nearpod lesson on plant organs • Experiment on transpiration using plants. 	<ul style="list-style-type: none"> • Explain the function of at least four plant organs • Describe how the loss of water from the leaves drives transpiration
W3	DNA and Chromosomes	<ul style="list-style-type: none"> • Students should know the structure and function of DNA including the correct base pairing of A, T, C and G • They should know that chromosomes are made up of DNA and that sections of DNA represent genes • They should know that genes give instructions for different characteristics • They should know that alleles are different forms of the same gene that give rise to different genotypes 	<ul style="list-style-type: none"> • Students are to make a model of DNA using sweets • Activity creating characteristics from genetic code • Creating a poster to show chromosomes and how we get half from each parent. • List of alleles that give rise to different genotypes 	<p>I can</p> <ul style="list-style-type: none"> • Describe the structure and function of DNA including the correct base pairing of A, T, C and G • Explain that chromosomes are made up of DNA and that sections of DNA represent genes • Describe how genes give instructions for different characteristics • Explain that alleles are different forms of the same gene that give rise to different genotypes
W4	Genetic Diagrams	<ul style="list-style-type: none"> • Students should be able to use pedigree analysis using 	<ul style="list-style-type: none"> • Worksheets using genetic diagrams to work out chance of inheriting simple characteristics 	<p>I can</p>

		<p>homozygous and heterozygous individuals</p> <ul style="list-style-type: none"> • They should be able to work out chances of inheriting simple variations using punnet squares 		<ul style="list-style-type: none"> • Use pedigree analysis using homozygous and heterozygous individuals • Work out chances of inheriting simple variations using punnet squares
W5	Inherited diseases	<ul style="list-style-type: none"> • Students should be able to name at least two inherited diseases • They should be able to work out the chance of somebody developing the disease using a punnet square 	<ul style="list-style-type: none"> • Nearpod lesson in which students are to research inherited diseases and list symptoms as well as explaining if the disease is dominant or recessive • They are to use knowledge of punnet squares to work out the chances of developing a disease • They will take place in a debate about genetic screening 	<p>I can</p> <ul style="list-style-type: none"> • name at least two inherited diseases • I can work out the chance of somebody developing the disease using a punnet square
W6	Mutations	<ul style="list-style-type: none"> • Students should know that genetic mutations occur when the base sequences on a DNA molecule is changed • They should know that genetic mutation can change the characteristics of an organism • They should know ways that genetic mutations can be beneficial or harmful to organisms 	<ul style="list-style-type: none"> • Students will learn about peppered moths and create a story board to explain mutation • They will complete a diary entry about Darwin's finches • Students will explain how cancer is a harmful mutation of DNA 	<p>I can</p> <ul style="list-style-type: none"> • Explain that genetic mutations occur when the base sequences on a DNA molecule is changed • Explain the genetic mutation can change the characteristics of an organism • Explain how genetic mutations can be beneficial or harmful to organisms