YEAR 10 OVERVIEW 2020/21 - BIOLOGY

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	**Cells**	**Systems**	**Systems**	**Disease**	**Natural World**	**Coordination & Control**
	Cells can be eukaryotic or prokaryotic. Some cellular features are shared between animal and plant cells; some cells have unique adaptations because they are specialised. Stem cells, however, are non-specialised and can become any type of cell found within an organism. We can use a microscope to examine cells and sub-cellular structures. Substances can move into and out of cells via the processes of diffusion, osmosis and active transport. ***SEPARATE SCIENCE:*** Unicellular microorganisms, such as bacteria can be cultured in aseptic conditions so that the effect of antibiotics/antiseptics can be investigated.	Organisms are organised to include cells, tissues, organs and organ systems. The Human Digestive System breaks down large insoluble molecules into smaller soluble molecules. Enzymes are produced to help with digestion. Enzymes can be affected by changes in temperature and pH. The heart contains atria and ventricles and pumps deoxygenated blood to the lungs and oxygenated blood to the body. Blood contains red blood cells, white blood cells, platelets and plasma and circulates the body through arteries, veins and capillaries.	Lifestyle factors can influence the prevalence of non-communicable diseases, including cancer. Plants also contain tissues, organs and organ systems. These play a vital role in the transport of substances around a plant and in gas exchange. **Disease** Communicable diseases are infectious diseases caused by bacteria, viruses, protists and fungi. The human body can defend against these pathogens through non-specific defence systems and the immune system. The immune system includes white blood cells which help to defend against pathogens.	Vaccination can help to reduce the spread of a pathogen if used within a large proportion of the population. Antibiotics can be used to kill bacteria but not viruses. Some bacteria are becoming resistant to antibiotics. ***SEPARATE SCIENCE:*** Monoclonal antibodies from lymphocytes have numerous industrial uses. There are many ways to spot diseases in plants; some of which can affect plant growth.	Photosynthesis occurs in the chloroplasts of plant cells. The rate of this reaction can be affected by light intensity and carbon dioxide concentration. Respiration occurs in the mitochondria of living cells and transfers energy to the cell from glucose. During exercise, the body reacts to the increased demand for energy; the heart rate, breathing rate and breath volume increase. **Coordination & Control** Homeostasis maintains optimal conditions for enzyme action and all cell functions. The human nervous system and endocrine system allow the body to respond to stimuli. The reflex arc allows reflex actions to be automatic and rapid.	Hormones secreted from glands in the endocrine system causes 'slower' changes compared to the nervous system. Blood glucose and the menstrual cycle are regulated by hormones. Some contraceptives contain hormones to control aspects of fertility. ***SEPARATE SCIENCE:*** The brain controls complex behaviour and the different areas of the brain have different functions. The eye is a sense organ which contains receptors sensitive to light intensity and colour. Body temperature is also controlled by the brain. Plant Hormones can be used as weed killers and for promoting plant growth.