

Year 10 Biology Curriculum Map

Overview	<p>In Year 10, a case study of the digestive system is used to explain how cells of different types are organised into tissues and organs. This leads into the introduction of chemical processes within cells being driven by enzymes. The respiratory system is covered, and its close link to circulation. These processes of exchange and transport are then covered in plants.</p> <p>Health and disease follows with coverage on various communicable diseases, human defence mechanisms and then the impact of lifestyle on non-communicable disease. Triple scientists will cover the role of monoclonal antibodies in medicine, together with some microbiology and the diseases of plants.</p> <p>The energy organisms need is now introduced, and we explore how plants harness the Sun's energy in photosynthesis in order to make food. Both animals and plants use this oxygen to oxidise food in a process called aerobic respiration which transfers the energy that the organism needs to perform its functions.</p> <p>Cells in the body can only survive within narrow physical and chemical limits. In order to do this the body requires control systems that constantly monitor and adjust the composition of the blood and tissues. In this section we will explore the structure and function of the nervous system and how it can bring about fast responses. We will also explore the hormonal system which usually brings about much slower changes. Hormonal coordination is particularly important in reproduction since it controls the menstrual cycle. An understanding of the role of hormones in reproduction has allowed scientists to develop not only contraceptive drugs but also drugs which can increase fertility.</p>					
Year 10	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	B3 Organisation and the digestive system B4 Organising animals and plants	B5 Communicable disease B6 Preventing and treating disease	B7 Non-communicable disease B8 Photosynthesis	B9 Respiration	B10 The human nervous system	B11 Hormonal control system
Knowledge	How organisms are organised. The structure of the digestive system and principles of chemical digestion. Transport within a human including the structure of the heart	Communicable (infectious) diseases including diseases caused by bacteria, viruses, fungi and protists. Human defence systems: immunity and vaccination Discovery and development of drugs including antibiotics	The effect of lifestyle on some non-communicable diseases including the effects of alcohol, smoking, exercise and diet. The causes and treatments of cancer are covered. Photosynthesis, the	Aerobic and anaerobic respiration. Energy within chemical molecules is released in respiration. This is then linked to the body's response to exercise and the principles of metabolism.	Homeostasis, and control systems that maintain constant conditions inside an organism. The human nervous system, including the structure of neurones and their function. The brain (biology only), it's	Human endocrine system, including the nature of hormonal communication. Control of blood glucose concentration, its regulation and the condition of diabetes. Hormones in human

	<p>and blood vessels and composition of blood.</p> <p>Coronary heart disease: a non-communicable disease</p> <p>Organisation of plant tissues and the transport and exchange in a plant.</p>	<p>Culturing microorganisms (biology only)</p> <p>Monoclonal antibodies as new drugs to diagnose and treat disease. (biology only)</p> <p>Plant disease and plant defences. (biology only)</p>	<p>process where the energy from the sun is transferred into chemical energy in a plant. Practical work looks at the rate of photosynthesis</p>		<p>structure, function and how it is studied.</p> <p>The eye (biology only), it's structure, function and how vision can be corrected.</p>	<p>reproduction and their interaction in the menstrual cycle.</p> <p>Contraception as methods to reduce fertility.</p> <p>The use of hormones to treat infertility (HT only)</p> <p>Plant hormones (biology only), their role in plant development and responses, and the use of plant hormones.</p>
Skills	<p>Develop an understanding of size and scale in relation to cells, tissues, organs and Systems.</p> <p>Use simple compound measures such as rate and carry out rate calculations for blood flow.</p>	<p>The principles of sampling as applied to scientific data, including epidemiological data.</p> <p>Convert disease incidence 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 correlations</p>	<p>Understand the principles of sampling as applied to scientific data, including epidemiological data.</p> <p>Solve simple algebraic Equations including the inverse square law.</p>	<p>Investigations into the effect of exercise on the body.</p>	<p>Extract and interpret data from graphs, charts and tables, about the functioning of the nervous system.</p> <p>Translate information about reaction times between numerical and graphical forms.</p> <p>Evaluate the benefits and risks of procedures carried out on the brain and nervous system.</p> <p>Interpret ray diagrams, showing these two common defects of the eye.</p>	<p>Extract and interpret data from graphs showing hormone levels during the menstrual cycle.</p> <p>Show why issues around contraception cannot be answered by science alone.</p> <p>Understand social and ethical issues associated with IVF treatments.</p> <p>Interpret and explain simple diagrams of negative feedback control.</p>
Assessment	<p>October – Chapters 1, 2 and 3 assessed. (Combined Science & Triple Science)</p>		<p>January – Chapters 1 – 4 assessed. (Combined Science & Triple Science)</p>	<p>March – Mock exam assessing. Combined Science – Chapters 1 – 7 Triple Science – Chapters 1 – 8</p>		<p>June – Chapters on Paper 1 not assessed previously. Combined Science & Triple Science – Chapters 8 and 9</p>