West Kirby Grammar School

Curriculum Map – Year 8 – Biology (2024-25)

Topic name	Term	Skills developed	Link to NC subject content	Prior learning	Next link in curriculum
Photosynthesis	Autumn	Scientific attitudes • Evaluate risks Experimental skills and investigations • Ask questions based on observations of the real world, alongside prior knowledge and experience • Make predictions using scientific knowledge and understanding • Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate • Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety • Make and record observations and measurements • Apply sampling techniques Analysis and evaluation • Present observations and data using appropriate methods, including tables and graphs • Explaining data in relation to predictions and hypotheses Measurement • Carry out appropriate calculations	Material cycles and energy Photosynthesis • the reactants in, and products of, photosynthesis, and a word summary for photosynthesis • the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store • the adaptations of leaves for photosynthesis Gas exchange systems • the role of leaf stomata in gas exchange in plants Nutrition and digestion • plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots Interactions and interdependencies Relationships in an ecosystem • the interdependence of organisms in an ecosystem – food chains & sampling techniques to estimate population size	Links from KS2: B3.1 PLANTS Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants Links to other KS3 topics: Cells, tissues and organs – plant cells	Y9 Cells & Microscopes Links to GCSE Topic: 4.4 Bioenergetics 4.4.1 Photosynthesis (taught in Y10) 4.7 Ecology 4.7.4 Organisation of an ecosystem - required practical 9 (taught in Y11)

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Respiration, breathing & movement	Spring & summer	Scientific attitudes • Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility Experimental skills and investigations • Ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience • Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate • Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety • Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements Analysis and evaluation • Apply mathematical concepts and calculate results • Present observations and data using appropriate methods, including tables and graphs • Interpret observations and data, including identifying patterns and	Nutrition and digestion • content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed • calculations of energy requirements in a healthy daily diet Cellular respiration • aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life • a word summary for aerobic respiration • the process of anaerobic respiration in humans and micro-organisms, including fermentation, and a word summary for anaerobic respiration • the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism Gas exchange systems • the structure and functions of the gas exchange system in humans, including adaptations to function • the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume The skeletal and muscular systems	Links from KS2: ANIMALS including HUMANS Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Links to other KS3 topics: Cells, tissues and organs (digestive system – taught in Y7)	Links to GCSE Topic: 4.1.3 Transport in cells 4.1.3.1 Diffusion (lungs as a gas exchange surface – taught in Y10) 4.4 Bioenergetics 4.4.2 Respiration (taught in Y10)

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		using observations, measurements and data to draw conclusions • Present reasoned explanations, including explaining data Measurement • Understand and use SI units • Use and derive simple equations and carry out appropriate calculations	• the structure and functions of the human skeleton, to include support, protection, movement and making blood cells • biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles • the function of muscles and examples of antagonistic muscles.		