Biology

Year 10 Triple Award

Pupil Checklist

Personalised Learning Checklist

WJEC Biology Separate from 2016 Unit 1: 1.1 - 1.3

Topic	Student Checklist	R	A	G
Topic 1.1 Cells and movement across membranes	Describe the structure of animal and plant cells, including drawing and labelling diagrams			
	Describe the function of the following cell parts: cell membrane, cytoplasm, nucleus, mitochondria, cell wall, chloroplast, vacuole			
	Spec prac: Use a light microscope to view animal and plant cells			
	Explain how cells are differentiated in multicellular organisms to become adapted for specific functions			
	Describe the levels of organisation within organisms			
	Describe and explain the process of diffusion and the role of the cell membrane in diffusion			
	Explain how Visking tubing can be used as a model of diffusion in living material			
	Define osmosis in terms of solute concentration and movement across a membrane			
	HT only: Describe active transport in terms of movement against a concentration gradient			
	Describe how enzymes control chemical reactions within cells			
	HT only: Describe how different amino acid chains form enzymes with different structures and functions			
	Explain what the 'lock and key' model is in terms of enzyme function			
	Interpret enzyme activity in terms of molecular collisions			
	HT only: Describe the formation of enzyme-substrate complexes			
	Describe the effect of temperature and pH on enzyme activity			
	Spec prac: Investigate the factors affecting enzyme action			
Topic 1.2 Respiration and the respiratory system in humans	Describe the condition needed for aerobic respiration to take place and describe the process			
	State the word equation for aerobic respiration			
	HT only: Recall what ATP is and its role in respiration			
	Describe the conditions needed for anaerobic respiration to take place and describe the process			
	HT only: Explain why respiration is a less efficient process than aerobic respiration			
	State the word equation for anaerobic respiration			
	Describe the purpose of the respiratory system			

	Label key structures in the respiratory system			
	Describe the function of mucus and cilia in the respiratory system			
	Describe the mechanisms of inspiration and expiration in terms of changes in volume and pressure			
	Describe how the bell jar model can be used to illustrate inspiration and expiration and the limitations of this model			
	Label key structure of an alveolus and its blood supply			
	State the percentage composition of inspired and expired air, the reasons for the differences and recall the test for CO_2			
	Describe the adaptations of alveoli for gas exchange			
	Describe how gases diffuse between alveolar air and capillaries			
	Explain how smoking effects cilia and mucus in the respiratory system and the consequences for the individual			
	Describe the causes and consequences of lung cancer and emphysema			
Topic 1.3 Digestion and the digestive system in humans	Explain why the body needs to digest food			
	Name key large insoluble molecules and the soluble products they are broken down into			
	Describe the tests for the presence of: starch, glucose and protein			
	State the role of the following enzymes in digestion: carbohydrase; protease; lipase			
	Label key structures on a diagram of the digestive system			
	Describe the role of the following organs in digestion and absorption: mouth, stomach,pancreas, small intestine, large intestine, liver			
	Describe how food is moved by peristalsis			
	Explain how bile aids in digestion			
	Explain how soluble substances can be absorbed through the wall of the small intestine and eventually into the bloodstream			
	Describe how visking tubing can be used as a model gut, including the limitations of the model			
	Describe what the digested products of fats, carbohydrates and proteins are used for in the body			
	Explain the importance of a balanced diet			
	Describe how and where the body stores excess energy			
	Spec prac: Investigate the energy content of different foods			
	Describe the implications, particularly for health, of excess sugar, fat and salt in foods			

Personalised Learning Checklist

WJEC Biology Separate from 2016 Unit 1: 1.4 - 1.6

Topic	Student Checklist	R	A	G
Topic 1.4 Circulatory system in humans	Draw and label a phagocyte and a red blood cell			
	Describe the functions of the four main parts of the blood			
	State what the heart is made of and describe its role in the circulatory system			
	Describe the role of the coronary blood vessels			
	State the type of blood vessels that blood flows through, to and from the organs and the heart			
	Label the structure of the heart			
	Describe the passage of blood through the heart including the functions of the valves			
	Describe the structure of a double circulatory system and name the two systems			
	Describe the structure and function of capillaries			
	Bio only: Describe the structure of arteries, veins and capillaries and link this to their function			
	State the risk factors for cardiovascular disease and the effects of cardiovascular disease			
	Bio only: Describe the advantages and disadvantages of the main treatments of cardiovascular disease (Statins, angioplasty and lifestyle)			
Topic 1.5 Plants and photosynthesis	Explain the importance of photosynthesis			
	State the word equation for photosynthesis			
	State the conditions needed for photosynthesis to take place			
	Describe the factors which affect the rate of photosynthesis			
	HT only: Describe the factors that limit the rate of photosynthesis			
	Describe how to test the leaf for starch			
	Spec prac: Investigate the factors affecting the rate of photosynthesis			
	Describe the uses made by plant cells of the glucose produced in photosynthesis			
	Bio only: Label the key structures of a leaf			
	Bio only: Describe the function of the stomata			
	Bio only: Explain why water is important in plants			
	Bio only: Explain why root hairs are significant in increasing the area for absorption in a root			

	Bio only: Describe the role of osmosis in the uptake and movement of water through a plant			
	HT & Bio only: Describe the uptake of mineral salts by active transport			
	Bio only: Describe the movement of water through the plant and the role of the xylem			
	Bio only, spec prac: Investigate the effect of different environmental conditions on the rate of transpiration from a plant			
	Bio only: Describe the role of phloem in the plant			
	Bio only: Describe the effects of plant nutrient deficiencies on plant growth to include lack of; nitrates, potassium and phosphate			
	Bio only: Explain why NPK fertilisers are used			
Topic 1.6 Ecosystems, nutrient cycles and human impact on the environment	Use food chains and food webs to show the transfer of energy between organisms			
	Define producer, consumer, herbivore, carnivore and decomposer			
	State how energy is lost through a food chain			
	Use pyramids of numbers and biomass to show feeding relationships			
	HT only: Calculate the efficiency of energy transfers between trophic levels			
	HT only: Describe how efficiency of energy transfer affects the number of organisms at each trophic level			
	Bio only: Describe the importance of micro-organisms, bacteria and fungi in decay			
	Bio only: Describe how nutrients are released in decay and how the processes balance			
	Bio only: Describe the processes within the carbon cycle			
	HT & Bio only: Describe the processes within the nitrogen cycle			
	Discuss the issues associated with the need to balance the requirements for food and economic development with the needs of wildlife			
	Describe the advantages and disadvantages of intensive farming methods			
	Describe how indicator species and changes in pH and oxygen levels may be used assigns of pollution in a stream			
	Describe how lichens can be used as indicators of air pollution			
	Explain how small amounts of heavy metals, present in industrial waste and pesticides reach levels that can be toxic to animals			
	Explain the causes and effects of over use of fertilisers on animals living in water ways			