

Cambridge Technicals Level 3 for Health & Social Care

Name of unit	Unit 4: Anatomy and physiology for health and social care
Why do we study this unit?	This unit aims to introduce you to the basic structure and functions of the body systems involved in everyday activities and maintenance of health, including cardiovascular, respiratory and digestive systems. You will also understand the part played by organs such as the pancreas, liver and kidney. You will investigate the systems and organs involved in detecting and responding to change such as the nervous system as well as the eyes and ears.
By the end of the unit, students will be able to....	<ol style="list-style-type: none"> 1. Understand the cardiovascular system, malfunctions and their impact on individuals 2. Understand the respiratory system, malfunctions and their impact on individuals 3. Understand the digestive system, malfunctions and their impact on individuals 4. Understand the musculoskeletal system, malfunctions and their impact on individuals 5. Understand the control and regulatory systems, malfunctions and their impact on individuals
Links to previous units	
Key vocabulary	Endocrine, homeostasis, ventricles, vena cava, pulmonary arteries and veins, aorta, lymphatic, osteoporosis
Week and summary topic	Knowledge and skills learned
1. Understand the cardiovascular system, malfunctions and their impact on individuals	<ol style="list-style-type: none"> 1.1 Composition of blood, i.e. <ul style="list-style-type: none"> • erythrocytes • lymphocytes • neutrophils • monocytes • platelets • plasma 1.2 Functions of blood, i.e. <ul style="list-style-type: none"> • transport • temperature regulation

	<ul style="list-style-type: none"> • exchange of materials with body tissues • preventing infection • blood clotting 1.3 Structure of heart, i.e. <ul style="list-style-type: none"> • atria • ventricles • vena cava • pulmonary arteries and veins • aorta • tricuspid and bicuspid valves • semi-lunar valves • coronary arteries 1.4 Function of heart, i.e. <ul style="list-style-type: none"> • double pump • diastole • systole • cardiac cycle • role of component parts 1.5 Control and regulation of cardiac cycle, i.e. <ul style="list-style-type: none"> • location and role of SA and AV nodes • Purkyne fibres • ECG trace (P, Q, R, S and T waves/spikes) 1.6 Types, structure and functions of blood vessels, i.e. <ul style="list-style-type: none"> • arteries • veins • capillaries 1.7 Formation of tissue fluid and lymph, i.e. <ul style="list-style-type: none"> • role of hydrostatic pressure • blood proteins • structure and role of lymphatic system 1.8 Cardiovascular malfunctions – possible causes and symptoms, i.e. <ul style="list-style-type: none"> • hypertension • coronary heart disease (e.g. angina, heart attack) 1.9 Monitoring, treatment and care needs for cardiovascular malfunctions (e.g. impact on lifestyle changes, medication, blood pressure readings, ECG traces,
<p>2. Understand the respiratory system, malfunctions and their impact on individuals</p>	<p>2.1 Structure of respiratory system, i.e.</p> <ul style="list-style-type: none"> • larynx • trachea • bronchi • bronchioles • alveoli • diaphragm • intercostal muscles • pleural membranes <p>2.2 Inspiration and expiration, i.e.</p> <ul style="list-style-type: none"> • role of pleural membranes • role of diaphragm • role of intercostal muscles <p>2.3 Gaseous exchange. i.e.</p> <ul style="list-style-type: none"> • role and structure of alveoli walls • diffusion gradients

	<ul style="list-style-type: none"> • erythrocytes • plasma <p>2.4 Cellular respiration, i.e.</p> <ul style="list-style-type: none"> • role of glucose • oxygen • function of ATP • aerobic/anaerobic respiration • production of carbon dioxide • production of lactic acid • production of ATP <p>2.5 Respiratory malfunctions – possible causes and effects, i.e.</p> <ul style="list-style-type: none"> • asthma • emphysema • cystic fibrosis <p>2.6 Monitoring, treatment and care needs for respiratory malfunctions (e.g. impact on lifestyle, inhalers, medication, peak flow, physiotherapy, spirometry, oxygen)</p>
<p>3. Understand the digestive system, malfunctions and their impact on individuals</p>	<p>3.1 Gross structure of digestive system and functions of component parts, i.e.</p> <ul style="list-style-type: none"> • buccal cavity • salivary glands • epiglottis • oesophagus • stomach • small intestine • large intestine • rectum • anus • liver • gallbladder • bile duct • pancreas • pancreatic duct <p>3.2 Mechanical and chemical digestion, i.e.</p> <ul style="list-style-type: none"> • action of chewing • action of stomach • action of digestive enzymes in stomach and small intestine <p>3.3 Digestive roles of liver and pancreas, i.e.</p> <ul style="list-style-type: none"> • digestive role of pancreatic juice • digestive role of bile <p>3.4 Absorption and assimilation, i.e.</p> <ul style="list-style-type: none"> • adaptations of intestine wall for absorption (e.g. nutrients) • liver's role in assimilation <p>3.5 Digestive malfunctions – possible causes and effects, i.e.</p> <ul style="list-style-type: none"> • Irritable Bowel Syndrome • gallstones • coeliac disease <p>3.6 Monitoring, treatment and care needs for digestive malfunctions (e.g. impact on diet/lifestyle, endoscopy, ultrasound, lithotripsy and monitoring, medication)</p>
<p>4. Understand the musculoskeletal</p>	<p>4.1 Structure of bone, i.e.</p> <ul style="list-style-type: none"> • vertical and transverse sections

<p>system, malfunctions and their impact on individuals</p>	<p>4.2 Types of joint, i.e.</p> <ul style="list-style-type: none"> • ball and socket (e.g. hip, shoulder) • pivot (e.g. neck) • hinge (e.g. elbow, knee) • sliding (e.g. wrist, ankle) • fixed (e.g. cranium, pelvis) <p>4.3 Components of a synovial joint, i.e.</p> <ul style="list-style-type: none"> • muscle • bone • ligament • tendon • cartilage • synovial capsule • synovial fluid <p>4.4 Muscle action around a joint, i.e.</p> <ul style="list-style-type: none"> • antagonistic action of skeletal muscle • contraction • relaxation • role of tendons <p>4.5 Musculoskeletal malfunctions – possible causes and effects, i.e.</p> <ul style="list-style-type: none"> • arthritis • osteoporosis <p>4.6 Monitoring, treatment and care needs for musculoskeletal malfunctions (e.g. impact on lifestyle, clinical observation, blood tests, bone density scans, physiotherapy, exercise, dietary changes, assistive technology)</p>
<p>5. Understand the control and regulatory systems, malfunctions and their impact on individuals</p>	<p>5.1 Components of nerve systems, i.e.</p> <ul style="list-style-type: none"> • central Nervous System • peripheral nerves • autonomic system • spinal cord • sensory and motor neurons <p>5.2 Structure and function of brain, i.e.</p> <ul style="list-style-type: none"> • cerebral cortex • cerebellum • frontal lobes • corpus callosum • hypothalamus • medulla • meninges <p>5.3 Nerve action, i.e.</p> <ul style="list-style-type: none"> • structure of neuron • role of axon/dendron • myelin sheath • synapse <p>5.4 Organisation and function of endocrine system, i.e.</p> <ul style="list-style-type: none"> • pancreas • pituitary • adrenal glands • thyroid • hormones <p>5.5 Structure of kidney, i.e.</p>

	<ul style="list-style-type: none"> • cortex • medulla • calyx • ureters • renal artery/vein • urethra • bladder, kidney nephron <p>5.6 Functions of kidney, i.e.</p> <ul style="list-style-type: none"> • removal of urea, regulation of water levels, ultrafiltration, reabsorption, osmoregulation, parts of nephron involved <p>5.7 Breakdown functions of liver, i.e.</p> <ul style="list-style-type: none"> • deamination, detoxification, production of bile <p>5.8 The concept of homeostasis, i.e.</p> <ul style="list-style-type: none"> • principles of homeostasis (monitoring, feedback mechanisms, effectors) and its importance <p>5.9 Malfunctions of control and regulatory systems – possible causes and effects</p> <ul style="list-style-type: none"> • brain, i.e. <ul style="list-style-type: none"> o stroke • CNS, i.e. <ul style="list-style-type: none"> o multiple sclerosis • endocrine, i.e. <ul style="list-style-type: none"> o diabetes • kidney, i.e. <ul style="list-style-type: none"> o nephrotic syndrome • liver, i.e. <ul style="list-style-type: none"> o cirrhosis <p>5.10 Monitoring, treatment and care needs for malfunctions of control and regulatory systems (e.g. impacts on lifestyle, physiotherapy, speech therapy, assistive technology, blood tests, urine tests, eye</p>
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