Hunterian Museum

at the Royal College of Surgeons of England

Hunterian Museum Anatomy and Pathology Workshop Themes and Curriculum Links

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1. AQA A-level Biology

Curriculum Specification (Version 1.5 26 November 2021): click here

Lung

3.3 Organisms exchange substances with their environment 3.3.2 Gas Exchange	• Structure of the human gas exchange system including the alveoli, bronchioles, bronchi, trachea and lung • Ventilation and the exchange of gases • Information relating to the effects of lung disease on gas exchange and/or ventilation • Information relating to the effects of pollution and smoking on the incidence of lung disease • Information relating to specific risk factors and the incidence of lung disease
3.3 Organisms exchange substances with their environment 3.3.4 Mass transport in animals	• The general pattern of blood circulation in a mammal – Names are required only of the coronary arteries and of the blood vessels entering and leaving the heart, lungs and kidneys

Heart

3.3 Organisms exchange substances with their environment 3.3.4 Mass transport in animals	• The general pattern of blood circulation in a mammal – Names are required only of the coronary arteries and of the blood vessels entering and leaving the heart, lungs and kidneys • The gross structure and function of the human heart • Information associated with specific risk factors and the incidence of cardiovascular disease • Information associated with risk factors affecting cardiovascular disease

Digestive system

3.3 Organisms exchange substances with their environment 3.3.3 Digestion and absorption	• During digestion, large biological molecules are hydrolysed to smaller molecules that can be absorbed across cell membranes, covering organs including ileum

Kidneys and liver

3.3 Organisms exchange substances with their environment 3.3.4 Mass transport in animals	• The general pattern of blood circulation in a mammal – Names are required only of the coronary arteries and of the blood vessels entering and leaving the heart, lungs and kidneys
3.6.4 Homeostasis is the maintenance of a stable internal environment (A-level only) 3.6.4.2 Control of blood glucose concentration	• The role of the liver in glycogenesis, glycogenolysis and gluconeogenesis

Blood vessels

3.3 Organisms exchange substances with their environment 3.3.4 Mass transport in animals	• The general pattern of blood circulation in a mammal – Names are required only of the coronary arteries and of the blood vessels entering and leaving the heart, lungs and kidneys • The structure of arteries, arterioles and veins in relation to their function. • The structure of capillaries and the importance of capillary beds as exchange surfaces • The formation of tissue fluid and its return to the circulatory system

2. BTEC Level 3 National in Health and Social Care (Extended Certificate)

Curriculum Specification (Qualification number: 610/3964/0; first teaching from September 2025): click here

Lung

Unit 2: Human biology and health B2 The respiratory system	• The structure and function of trachea and lungs, including the bronchi, bronchioles and alveoli • Ventilation

Unit 2: Human biology and health
 	
C1 The main disorders of the body systems
	• Chronic obstructive pulmonary disorder – emphysema and chronic bronchitis:
	  ○ causes – chronic exposure to irritants e.g. smoking, leading to damage to the alveoli (emphysema) and persistent inflammation of the airways (chronic bronchitis)
	  ○ primary effects – breathlessness, excess mucus production and persistent cough, frequent chest infections, persistent wheezing, increased heart rate
	  ○ secondary effects – weight loss, muscle weakness and reduced mobility
	  ○ body systems – respiratory, cardiovascular, digestive and musculoskeletal
	• Asthma:
	  ○ causes – a combination of genetic and environmental factors leading to inflammation and narrowing of the airways
	  ○ primary effects – shortness of breath, wheezing, a tight chest and coughing. In an asthma attack this becomes severe and constant leading to breathlessness, faster breathing and heartbeat, confusion, drowsiness and dizziness, fainting, blue lips and fingers
	  ○ secondary effects – anxiety and depression, pneumonia, delays in growth (children)
	  ○ body systems – respiratory, cardiovascular

Unit 2: Human biology and health
 	
C1 The main disorders of the body systems
	• Lung cancer:
	  ○ causes – an uncontrollable growth of abnormal cells, due to a combination of: (a) genetic factors – cancer-risk genes o lifestyle factors – smoking cigarettes and tobacco use (b) environmental factors – passive smoking; exposure to certain chemicals and substances which are used in several occupations and industries such as arsenic and asbestos
	  ○ primary effects – on the respiratory system (a) persistent cough, recurrent chest infections, coughing up blood, pain when breathing or coughing
	• secondary effects – on interlinked body systems (a) effects on cardiovascular system: anaemia and persistent tiredness due to internal bleeding/coughing up blood. Increased risk of blood clots (b) effects on digestive system: loss of appetite and weight loss (c) effects on musculoskeletal system: loss of bone and muscle mass. metastasis (spreading to other parts of the body such brain, bones, liver and adrenal glands) leading to organ failure and death

Heart

Unit 2: Human biology and health B1 The cardiovascular system	• The structure and function of heart and cardiac cycle ○

Unit 2: Human biology and health
 	
C1 The main disorders of the body systems
	• Coronary heart disease:
	  ○ causes – atherosclerosis, hypertension
	  ○ primary effects – heart attack, angina, heart failure
	  ○ secondary effects – shortness of breath, dizziness, nausea and vomiting
	  ○ body systems – cardiovascular, respiratory and digestive

Digestive system

Unit 2: Human biology and health B6 The function of further body systems	• The primary functions of additional body systems and how they link to other systems to include digestive system: role of the alimentary canal – oesophagus, stomach, duodenum, ileum, colon, and the accessory organs – liver, pancreas, gallbladder and salivary glands, in the breakdown and absorption of food materials.
Unit 2: Human biology and health C1 The main disorders of the body systems	• Bowel cancer: o causes – an uncontrollable growth of abnormal cells, due to a combination of: (a) genetic factors – cancer-risk genes (b) lifestyle factors – smoking; consumption of red and processed meat; alcohol consumption; overweight and obesity (c) pre-existing conditions – inflammatory bowel disease o primary effects on the digestive system (d) changes in faeces, changes in occurrence of defaecating, bleeding from the anus/blood in stool, pain in the abdomen, bloating, weight loss o secondary effects on interlinked body systems (a) effects on cardiovascular system: anaemia and persistent tiredness due to internal bleeding/bleeding from the anus (b) effects on musculoskeletal system: loss of bone and muscle mass (c) metastasis (spreading to other parts of the body such as liver and lungs) leading to organ failure and death.

Kidneys and liver

Unit 2: Human biology and health B4 The endocrine and renal systems	• The role of the hypothalamus in controlling the endocrine system
Unit 2: Human biology and health C1 The main disorders of the body systems	• Diabetes – type 1 and type 2: o causes – type 1: the body produces insufficient insulin, or none at all; type 2: the body produces insufficient insulin and/or becomes insulin resistant

Unit 2: Human biology and health C1 The main disorders of the body systems	○ primary effects – uncontrolled blood sugar levels leading to weight change, blurred vision, feeling thirsty, hunger, mood changes, tiredness, excessive urination, itching, thrush infections, cuts and wounds heal slowly ○ secondary effects – heart disease and stroke, nerve damage, foot problems, vision loss, miscarriage and stillbirth, kidney problems, sexual problems ○ body systems – endocrine, cardiovascular, nervous, immune, digestive, reproductive

Brain

Unit 2: Human biology and health B3 The nervous system	• The structure and function of central nervous system, peripheral nervous system and autonomic nervous system
Unit 2: Human biology and health C1 The main disorders of the body systems	• Stroke: ○ causes – blocked artery (ischaemic stroke) or burst blood vessel (haemorrhagic stroke) ○ primary effects – brain damage, bleeding and clotting in the brain ○ secondary effects – muscle weakness, lack of co-ordination, dysphasia, increased incidence of respiratory infections ○ body systems – cardiovascular, nervous and musculoskeletal • Dementia – Alzheimer's disease and vascular dementia: ○ causes – Alzheimer's disease: build-up of proteins within and around brain cells · vascular dementia: reduced blood flow to the brain caused by narrowing of blood vessels, strokes and transient ischaemic attacks (TIAs) ○ primary effects – disrupted cognitive function ○ secondary effects – significant slowness of thought and confusion, memory loss, problems concentrating, severe personality changes, depression, incontinence, difficulties swallowing or coughing ○ body systems – nervous system, cardiovascular system, respiratory system

Unit 2: Human biology and health
 	
C1 The main disorders of the body systems
	• Acquired brain injury – traumatic and non-traumatic:
	  ○ causes – · traumatic: blow to the head or brain damage that occurs after birth · non-traumatic: caused by e.g. infection, disease, lack of oxygen
	  ○ primary effects – concussion, unconsciousness and coma, amnesia, damage to blood vessels in the brain
	  ○ secondary effects – traumatic: headaches and dizziness, memory loss, fatigue, personality changes; both: delayed growth and development (in children), issues with balance and coordination, cognitive, sensory and physical impairments, irritability, sleep disturbance
	  ○ body systems – nervous, cardiovascular, respiratory, musculoskeletal

Skeleton

Unit 2: Human biology and health B5 The musculoskeletal system	• The role of the structures of the musculoskeletal system in providing support and structure to the body and enabling movement: bone

Blood vessels

Unit 2: Human biology and health B1 The cardiovascular system	• The structure and function of blood vessels: arteries, veins, capillaries

3. BTEC Level 3 National in Medical Science (Extended Certificate)

Curriculum Specification (Qualification number: 610/3958/5; first teaching from September 2025): click here

Lung

Unit 1: Principles of human physiology, anatomy and pathology D2 The respiratory system	• Overview of anatomy of respiratory system • The structural adaptations of alveoli that allow gas exchange • Features of the airways • Role in ventilation
Unit 4: Diseases, disorders, treatments and therapies B1 Physiological diseases and disorders	• Cancer – lung

Heart

Unit 1: Principles of human physiology, anatomy and pathology D1 The cardiovascular system	• Double circulation (including overview of anatomy of double circulation) • Structure and function of the heart and its parts • Outline of disorders associated with the cardiovascular system: for example, cardiovascular disease (CVD) (diseases of the heart or blood vessels and includes atherosclerosis, arteriosclerosis, heart disease and stroke)

Digestive system

Unit 1: Principles of human physiology, anatomy and pathology E2 The digestive system	• Appearance and location (as seen on diagrams) of components of the digestive tract: mouth and salivary glands, oesophagus, stomach, duodenum, ileum, colon and rectum • Appearance and location (as seen on diagrams) of components of accessory organs: liver, gall bladder and pancreas • Digestion, absorption and assimilation of macronutrients

Unit 1: Principles of human physiology, anatomy and pathology E2 The digestive system	• Stomach (site of more mechanical digestion and chemical digestion and action of pepsin • Duodenum (action of bile, action of pancreatic enzymes – lipase, amylase and trypsin) • Ileum • Large intestine and small intestine • Outline of disorders of the digestive system: gastric ulcers, irritable bowel syndrome (IBS) and coeliac disease

Kidneys and liver

Unit 1: Principles of human physiology, anatomy and pathology E1 The renal system	• The functions of the kidneys: excretion and osmoregulation • The relationship between the structure, function and processes of the renal system (which, along with the lungs, makes up the excretory system) • Overview of anatomy of the renal system • Outline of disorders of the renal system (overview of causes, symptoms and treatment): kidney failure and kidney stones

Brain

Unit 1: Principles of human physiology, anatomy and pathology B1 The nervous system	• Central nervous system (brain and spinal cord) and peripheral nerves • The structure and function of neurones (sensory, motor and relay neurones) • Outline of disorders of the nervous system (brief overview): Parkinson's disease, multiple sclerosis (MS) and ALS amyotrophic lateral sclerosis (Lou Gehrig's disease)

Skeleton

Unit 1: Principles of human physiology, anatomy and pathology C1 The skeleton	• Names and locations of bones and structures: the axial skeleton, the appendicular skeleton – limbs and limb girdles, the functions of the skeleton (protection, support, movement, blood cell protection, storage of calcium and phosphate), basic structure of a typical long bone
Unit 1: Principles of human physiology, anatomy and pathology C3 Disorders of the musculoskeletal system	• Outline of disorders – osteoarthritis, osteoporosis/rickets, Duchenne muscular dystrophy and Myasthenia gravis

Blood vessels

Unit 1: Principles of human physiology, anatomy and pathology D1.4 Structure and functions of blood vessels	• The structural features and functions of blood vessels • How the structures of the vessels adapt them for their functions • Linkages with cardiovascular disease (CVD) (diseases of the heart or blood vessels and includes atherosclerosis, arteriosclerosis, heart disease and stroke)

4. Edexcel A-level Biology

Curriculum Specification (Specification code: YBI11): click here

Lung

Unit 1: Molecules, Diet, Transport and Health Topic 2 – Membranes, Proteins, DNA and Gene Expression	• Understand how the structure of the mammalian lung is adapted for rapid gaseous exchange

Heart

Unit 1: Molecules, Diet, Transport and Health Topic 1 – Molecules, Transport and Health	• Understand why many animals have a heart and circulation (mass transport to overcome the limitations of diffusion in meeting the requirements of organisms) • Know the cardiac cycle (atrial systole, ventricular systole and cardiac diastole) and relate the structure and operation of the mammalian heart, including the major blood vessels, to its function • Recommended Additional Practical: Investigate the structure of a mammalian heart by dissection • Understand why people's perception of risks are often different from the actual risks, including underestimating and overestimating the risks due to diet and other lifestyle factors in the development of heart disease • Understand how people use scientific knowledge about the effect of diet, including obesity indicators, such as body mass index and waist-to-hip ratio, exercise and smoking to reduce their risk of coronary heart disease • Know how factors such as genetics, diet, age, gender, high blood pressure, smoking and inactivity increase the risk of cardiovascular disease (CVD)

Unit 1: Molecules, Diet, Transport and Health Topic 1 – Molecules, Transport and Health	• Understand the link between dietary antioxidants and the risk of cardiovascular disease (CVD) • Know the benefits and risks of treatments for cardiovascular disease (CVD) (antihypertensives, statins, anticoagulants and platelet inhibitors)

Digestive system

Unit 1: Molecules, Diet, Transport and Health Topic 2 – Membranes, Proteins, DNA and Gene Expression	• Understand how the expression of a gene mutation in people with cystic fibrosis impairs the functioning of the gaseous exchange, digestive and reproductive systems

Kidneys and liver

Unit 5: Respiration, Internal Environment, Coordination and Gene Technology Topic 7 – Respiration, Muscles and the Internal Environment	• Know the gross and microscopic structure of the mammalian kidney • Understand how urea is produced in the liver from excess amino acids (details of the ornithine cycle are not required) and how it is removed from the bloodstream by ultrafiltration

Brain

Unit 5: Respiration, Internal Environment, Coordination and Gene Technology Topic 8 – Coordination, Response and Gene Technology	• Know that the mammalian nervous system consists of the central and peripheral nervous systems • Know the location and main functions of the cerebral hemispheres, hypothalamus, pituitary gland, cerebellum and medulla oblongata of the human brain

Unit 5: Respiration, Internal Environment, Coordination and Gene Technology Topic 8 – Coordination, Response and Gene Technology	• Understand how magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI), positron emission tomography (PET) and computed tomography (CT) are used in medical diagnosis and the investigation of brain structure and function • Understand how imbalances in certain naturally-occurring brain chemicals can contribute to ill health, including dopamine in Parkinson's disease and serotonin in depression, and to the development of new drugs

Skeleton

Unit 5: Respiration, Internal Environment, Coordination and Gene Technology Topic 7 – Respiration, Muscles and the Internal Environment	• Know the way in which muscles, tendons, the skeleton and ligaments interact to enable movement, including antagonistic muscle pairs, extensors and flexors

Blood vessels

Unit 1: Molecules, Diet, Transport and Health Topic 1 – Molecules, Transport and Health	• Understand how the structures of blood vessels (capillaries, arteries and veins) relate to their functions

5. Eduqas A-level Biology

Curriculum Specification (Teaching from 2015, Version 2 January 2019): click here

Lung

Component 3: Requirements for Life 1. Adaptations for gas exchange 2. Adaptations for transport	• The common features of the specialised respiratory surfaces of larger animals and the adaptation of respiratory surfaces to environmental conditions - fish have gills for aquatic environments and mammals have lungs for terrestrial environments • The structure and function of the human breathing system, including examination of microscope slides of T.S. lung and trachea • Ventilation in humans and how gases are exchanged • The function of red blood cells and plasma in relation to transport of respiratory gases, dissociation curves of haemoglobin of mammal (adult and foetus), including examination of microscope slides of erythrocytes
Option A: Immunology and Disease	• The following diseases in terms of the types of organisms; source of infection; tissue affected; mode of transmission; prevention; control methods and treatment, including vaccines: • Bacterial infections: tuberculosis

Heart

Component 3: Requirements for Life 2. Adaptations for transport	• Mammal double circulatory system • The mammalian circulatory system including the structure and function of heart and blood vessels and the names of the main blood vessels associated with the human hear • Specified Practical Work: Dissection of mammalian heart

Digestive system

Component 3: Requirements for Life 3. Adaptations for nutrition	• The adaptations of the human gut to a mixed, omnivorous diet that includes both plant and animal material, including examination of microscope slides of duodenum and ileum

Kidneys and liver

Component 3: Requirements for Life 4. Homeostasis and the kidney	• The structure of the mammalian kidney and the nephron, including examination of microscope slides and electron micrographs of kidney • The functions of the mammalian kidney including nitrogenous excretion and water regulation • The adaptations of the cells of the proximal tubule for reabsorption • The effects of kidney failure and its potential treatments • The need for different excretory products and adaptations of the loop of Henlé in different environments • Specified Practical Work: Dissection of kidney

Brain

Option C: Neurobiology and Behaviour	• The structure of the human brain – the position of the cerebrum, hypothalamus, hippocampus, cerebellum and medulla oblongata • The main functions of the cerebrum, hypothalamus, cerebellum and medulla oblongata • The role of the sympathetic and parasympathetic nervous systems

Skeleton

Option B: Human Musculoskeletal Anatomy	• The structure of the appendicular and axial skeleton (pectoral and pelvic girdles, forelimb and hind limb) • The types of fractures that can occur in the skeleton and their causes • The structure and function of the vertebral column, general structure of a vertebra and the differences between cervical, thoracic and lumbar vertebrae and be able to relate them to their function • Postural deformities, including scoliosis, their causes and treatment • The functions of the skeleton, including support, muscle attachment, protection, production of red blood cells and as a store of calcium

Blood vessels

Component 3: Requirements for Life 2. Adaptations for transport	• Connected with Heart: The mammalian circulatory system including the structure and function of heart and blood vessels and the names of the main blood vessels associated with the human heart

6. International Baccalaureate (IB) Biology

Curriculum Specification (First assessment 2025): click here

Lung

B3.1 Gas exchange	• Maintenance of concentration gradients at exchange surfaces in animals: Include dense networks of blood vessels, continuous blood flow, and ventilation with air for lungs and with water for gills • Adaptations of mammalian lungs for gas exchange: Limit to the alveolar lungs of a mammal. Adaptations should include the presence of surfactant, a branched network of bronchioles, extensive capillary beds and a high surface area • Ventilation of the lungs: Understand the role of the diaphragm, intercostal muscles, abdominal muscles and ribs

Heart

B3.2 Transport	• Connect with Blood vessel (see the section below) • Causes and consequences of occlusion of the coronary arteries: Evaluate epidemiological data relating to the incidence of coronary heart disease • Adaptations of the mammalian heart for delivering pressurized blood to the arteries: Include form–function adaptations of these structures: cardiac muscle, pacemaker, atria, ventricles, atrioventricular and semilunar valves, septum and coronary vessels • Stages in the cardiac cycle: Understand the sequence of events in the left side of the heart that follow the initiation of the heartbeat by the sinoatrial node (the “pacemaker”)

Kidneys and liver

D3.3 Homeostasis	• Role of the kidney in osmoregulation and excretion: understand the distinction between excretion and osmoregulation

Brain

C3.1 Integration of body systems	• The brain as a central information integration organ: Limit to the role of the brain in processing information combined from several inputs and in learning and memory • The spinal cord as an integrating centre for unconscious processes • Role of the cerebellum in coordinating skeletal muscle contraction and balance

Skeleton

B3.3 Muscle and motility	• Roles of skeletons as anchorage for muscles and as levers: arthropods have exoskeletons and vertebrates have endoskeletons

Blood vessels

B3.2 Transport	• Adaptations of arteries for the transport of blood away from the heart: Understand how the layers of muscle and elastic tissue in the walls of arteries help them to withstand and maintain high blood pressures • Adaptations of veins for the return of blood to the heart: Include valves to prevent backflow and the flexibility of the wall to allow it to be compressed by muscle action

7. OCR A-level Biology A

Curriculum Specification (Qualification number: 601/4260/1, Specification code: H420, first teach September 2023): click here

Lung

Module 3: Exchange and transport 3.1 Exchange and transport	• The structures and functions of the components of the mammalian gaseous exchange system • The mechanism of ventilation in mammals

Heart

Module 3: Exchange and transport 3.1.2 Transport in animals	• The external and internal structure of the mammalian heart • The dissection, examination and drawing of the external and internal structure of the mammalian heart • The cardiac cycle

Kidneys and liver

Module 5: Communication, homeostasis and energy 5.1.2 Excretion as an example of homeostatic control	• The structure and functions of the mammalian liver • The examination and drawing of stained sections to show the histology of liver tissue • The structure, mechanisms of action and functions of the mammalian kidney • The dissection, examination and drawing of the external and internal structure of the kidney • The examination and drawing of stained sections to show the histology of nephrons • The effects of kidney failure and its potential treatments

Module 5: Communication, homeostasis and energy 5.1.4 Hormonal communication	• The structure and functions of the adrenal glands • The histology of the pancreas • The examination and drawing of stained sections of the pancreas to show the histology of the endocrine tissues • The differences between Type 1 and Type 2 diabetes mellitus • The potential treatments for diabetes mellitus

Brain

Module 5: Communication, homeostasis and energy 5.1.5 Plant and animal responses	• The organisation of the mammalian nervous system • The structure of the human brain and the functions of its parts

Blood vessels

Module 3: Exchange and transport 3.1.2 Transport in animals	• The structure and functions of arteries, arterioles, capillaries, venules and veins

8. T Level Technical Qualification in Health

Curriculum Specification (Qualification number: 603/7066/X, Version 3.1 16 January 2024): click here

Lung

A9: Health and wellbeing	• How lifestyle choices impact good health and wellbeing: smoking – increases the risk of lung cancer, as well as other cancers
B2: Further science concepts in health	• The role of the components in performing the functions of the respiratory system: trachea, lungs, bronchi, bronchioles, alveoli, pleural membranes, ribs, intercostal muscles, diaphragm • Functions of relevant components within the respiratory system: inspiration and expiration, including pressure changes within the chest cavity, gas exchange • The role of the alveoli as a specialised exchange surface in the process of gas exchange: how adaptation of the alveoli maximises the rate of diffusion • The development, impact and management of chronic obstructive pulmonary disease (COPD): causes of the disease, impact on systems within the body and on physical and mental health, how common treatments relieve symptoms

Heart

A9: Health and wellbeing	• How lifestyle choices impact good health and wellbeing:
	  ○ nutrition and diet choices affecting body mass index – obesity increases risk of developing range of disease including heart disease
	  ○ smoking – increased risk of heart disease
	  ○ low physical activity – risk factor for a range of long-term conditions, including heart disease
	  ○ consumption of alcohol – long-term effects include organ damage including heart, and increased risk of hypertension and heart disease

A9: Health and wellbeing	○ substance abuse and addiction – longer term effects include risk of heart disease, cancer and hepatitis
B2: Further science concepts in health	• The role of the components in performing the functions of the cardiovascular system: mammalian heart: atria, ventricles, aorta, vena cava, pulmonary artery, pulmonary vein, tricuspid valve, pulmonary valve, mitral value and aortic valve • The process of the cardiac cycle • The development, impact and management of coronary heart disease (CHD): cause, impact, treatment

Digestive system

A9: Health and wellbeing	• How lifestyle choices impact good health and wellbeing: consumption of alcohol – weakens immune system, increasing risk of infections
B2: Further science concepts in health	• The role of the components in performing the functions of the digestive system: mouth ▪ oesophagus ▪ stomach ▪ pancreas ▪ liver ▪ duodenum, ileum and colon, including layers of the gastrointestinal tract ▪ associated glands linked to these components, including salivary glands in the mouth, gall bladder and bile duct • Function of relevant components within the digestive system: chemical digestion ▪ physical digestion ▪ absorption processes • The development, impact and management of Crohn's disease: cause, impact, treatment

Kidneys and liver

A9: Health and wellbeing	• How lifestyle choices impact good health and wellbeing: nutrition and diet choices affecting body mass index – obesity increases risk of developing range of disease including type 2 diabetes; consumption of alcohol – long-term effects include organ damage including liver and pancreas

B2: Further science concepts in health	• The role of the components in performing the functions of the endocrine system: hypothalamus ▪ pituitary ▪ thyroid ▪ parathyroid ▪ adrenals ▪ ovaries ▪ testes ▪ pancreas • Functions of relevant components within the endocrine system: the production and secretion of hormones: the activity of common hormones and their specificity in relation to target cells/organs: ▪ thyroxine ▪ cortisol ▪ oestrogens ▪ testosterone ▪ gastrin ▪ growth hormone ▪ follicle stimulating hormone (FSH) • The development, impact and management of diabetes: causes of type 1, type 2, and gestational diabetes; impact and treatment • The role of the components in performing the functions of the renal system: ▪ kidney nephron (Bowman's capsule, glomerulus, proximal convoluted tubule, loop of Henle, distal convoluted tubule, collecting duct) ▪ ureter ▪bladder ▪ urethra • Functions of the renal system: ▪ removal of waste products from the body ▪ process of urine production • The development, impact and management of chronic kidney disease (CKD): cause, impact and treatment

Brain

A9: Health and wellbeing	• How lifestyle choices impact good health and wellbeing: consumption of alcohol – weakens bones, increases risk of fracturing and breaks
B2: Further science concepts in health	• The role of the components in performing the functions of the nervous system: components of the nervous system: brain and spinal cord • Function of the relevant component of the nervous system: ▪ sensory neurones carry impulses from receptors to the central nervous system (CNS) ▪ motor neurones carry impulses away from the CNS to effectors ▪ the process of synaptic transmission and the function of the components of a motor neurone • The development, impact and management of Parkinson's disease: cause, impact and treatment

Skeleton

A9: Health and wellbeing	• How lifestyle choices impact good health and wellbeing: consumption of alcohol – effects on the brain including cognitive function, neurotransmitters and brain tissue

B2: Further science concepts in health	• Structure of the musculoskeletal system:
	  ○ Anatomical skeletal structure: cranium ▪ vertebrae ▪ clavicle ▪ sternum ▪ rib cage ▪ humerus ▪ radius ▪ ulna ▪ carpals ▪ metacarpals ▪ phalanges ▪ pelvis ▪ femur ▪ tibia ▪ fibula ▪ tarsals ▪ metatarsals
	  ○ Types of bones: long ▪ short ▪ flat ▪ irregular ▪ sesamoid
	  ○ Types of joints: fibrous ▪ cartilaginous ▪ synovial
	• Functions of relevant component within the musculoskeletal system: skeleton - provides support, protection, attachment for muscles/ligaments, is a source of blood production and stores minerals
	• The development, impact and management of rheumatoid arthritis: cause, impact, treatment

Blood vessels

B2: Further science concepts in health	• The role of the components in performing the functions of the cardiovascular system: arteries, veins and capillaries