Guidance for Centres

GA Level 3 Certificate in Anatomy, Physiology and Pathology: Learning Outcomes and Indicative Content

This guidance should be made available to learners, teachers and internal quality assurance staff involved in the delivery of this qualification.

The content is not prescriptive or exhaustive but is intended to provide helpful guidance to teachers and learners with the key areas that should be covered by the programme of learning.

Learning Outcome	The Candidate will:
1	understand the cells and tissues of the body
2	understand the skin, hair and nails
3	understand the skeletal system
4	understand the muscular system
5	understand the nervous system
6	understand the eyes and the ears
7	understand the endocrine system
8	understand the respiratory system
9	understand the cardiovascular system
10	understand the lymphatic system
11	understand the digestive system
12	understand the urinary system
13	understand the reproductive system
14	*understand the pathological disease process**

*Learning Outcome 14 understand the pathological disease process is a learning outcome embedded into the Syllabus Topic areas outlined below. Content relating to this Learning Outcome is presented in *italics*.

Syllabus Topic 1	The Cells and Tissues of the Body
Learning Outcome - The learner will:	understand the structures and functions of cells and tissues in the body
Indicative content:	
Assessment Criteria: The Candidate will know the: Levels of organisation in the body; Cells; Transport of substances through the cell membrane; Membranes; Cytoplasm; Organelles; Nucleus; Chromosomes; DNA; Cell Cycle; Mitosis and Cytokinesis; Histology; Tissues. *Atom, Molecule; Macromolecule; Organelles; Body systems; Organs; Tissues; Cell composition; nucleic acids; proteins; carbohydrates; lipids; Cell functions; Support and structure; Energy production; Transportation; Growth and repair; Reproduction; Cells types; Prokaryotic cells; Eukaryotic cells; Cell structure; Lysosome; Golgi apparatus; Mitochondria; Ribosome; Vacuole; Centrosome; Endoplasmic reticulum; Nucleus; Centromere; Chromatid; Telomere; Karyotype; Nucleolus; Nuclear membrane; Chromatin; Cell membrane; Diffusion, Osmosis; Active transport; Extracellular fluid; Lipid bilayer; Phospholipid bilayer; Interphase; Mitotic phase; Neural tissue; Neurons; Neuroglia; Muscle tissue; Voluntary and involuntary muscle; Cardiac; Skeletal; Smooth; Epithelial tissue; Simple squamous; Simple cuboidal; Simple columnar; Stratified squamous; Stratified cuboidal; Stratified columnar; Pseudostratified columnar; Connective tissue; Blood; Adipose; Cartilage; Loose connective; Dense connective; Bone; Serous membranes; Pleura; Peritoneum; Pericardium; Mucous membranes; Synovial membranes; Cutaneous membrane.*	

Syllabus Topic 2	The Skin, Hair and Nails
Learning Outcome - the learner will:	understand the structure, function and pathology of the skin, hair and nails
Indicative content:	
Assessment Criteria: The Candidate will know: The Functions of the Skin; Structure of the Skin; Skin types; Skin diseases and disorders; Nails; Structure of the nail; Diseases and disorders of the nail; Hair; Function of hair; Structure of hair; The hair growth cycle; Diseases and disorders of the hair. *Protection; Sensation; Regulation; The epidermis; Layers of the epidermis; Cells of the epidermis; Dermis; Layers of the dermis; Hair follicles; Sweat glands; Sebaceous glands; Structures of the dermis; Cells of the dermis; Hypodermis ; Well-balanced skin; Dry, oily and combination skin; Sensitive skin; Acne vulgaris; Acne rosacea; Dermatitis; Allergic reaction; Skin Infections; Pigmentation disorders; Skin cancer; Paronychia; Chromonychia; Nail ridges, thickening and splitting; Nails and cancer; Hair types; Hair shaft; Hair root and hair bulb; Colour and texture of hair; The hair growth cycle; Recap of the hair structure; Diseases and disorders of the hair; Excessive hair growth; Alopecia; Common types of hair loss; Hair shaft abnormalities.*	

Syllabus Topic 3	The Skeletal System
Learning Outcome - the learner will:	understand the structure, function and pathology of the skeletal system
Indicative content:	

Assessment Criteria: The Candidate will know: The Skeletal System functions; Skeletal system composition; Cartilage; Ligament; Bone; Joints; Variety of bones; Bones classification by shape; Structure of bone; Bone growth; Bone remodelling; Range of motion; Types of joints; Position of the bones of the skeleton; Posture; Skeletal system diseases and disorders.

Support, movement and protection; Mineral and energy storage; Calcium; Phosphorus; Haematopoiesis; Red bone marrow; Yellow bone marrow; Synovial fluid; Synovium; Collagen; Calcium phosphate; Compact bone; Cancellous bone; Periosteum; Long bones; Short bones; Flat bones; Irregular bones; Sesamoid bones; Blood and nerve supply to bones; Ossification; Growth plates; Epiphysis; Resorption; Formation; Osteoclasts; Osteoblasts; Osteocytes; Fibrous joints; Cartilaginous joints; Synovial joints; Hyaline cartilage; Ball and socket; Hinge; Condyloid; Pivot; Saddle; Plane/gliding; Axial skeleton; Skull; Cranial bones; Parietal (2); Temporal (2); Frontal (1); Occipital (1); Ethmoid (1); Sphenoid (1); Cranial sutures; Facial bones; Nasal (2);Lacrimal (2); Zygomatic (2); Inferior nasal concha (2); Vomer (1); Maxilla (2); Mandible (1); Platine (2) Bones of the inner ear; Malleus; Incus; Stapes; The Hyoid Bone; Vertebral Column; Vertebrae: Cervical; Thoracic; Spinal cord; Cerebrospinal fluid; Neck (cervical); Laryngeal skeleton; Chest (thoracic cage); Sternum; Ribs; Thoracic vertebrae; Lower back (lumbar; Sacrum; Coccyx; Appendicular skeleton; Upper limb bones; Shoulder girdle; Clavicle; Scapula; Acromion; Arm bones; Humerus; Ulna; Radius; Hand bones; Carpals; Metacarpals; Phalanges: Lower limb bones; Pelvic girdle; Ilium; Ischium; Pubis; Leg bones; Femur; Patella; Fibula; Tibia; Foot bones; Tarsals; Metatarsals; Phalanges; Interrelationship with other body system; Postural abnormalities; Lordosis; Kyphosis; Scoliosis; Broken bones and fracture; Types of fractures; Ankylosing spondylitis; Gout; Osteoarthritis; Rheumatoid arthritis; Bunion; Bursitis; Osteoporosis; Sprains.

Syllabus Topic 4	The Muscular System
Learning Outcome - the learner will:	understand the structure, function and pathology of the muscular system
Indicative content:	
Assessment Criteria: The Candidate will know: The types of muscle tissue; Skeletal muscles; Types of muscle attachments; Function of skeletal muscles; Structure of skeletal muscles; Structure of muscle fibres; The nervous system's role in muscle movement; Muscles and movement; Antagonist pairs; Position and action of the muscles; Interrelationship with other body systems; Diseases and disorders of the muscular system; Muscular problems. *Cardiac muscle; Smooth muscle; Skeletal muscle; Endomysium; Fascicle; Perimysium; Epimysium; Sarcolemma; Mitochondria; Sarcoplasmic reticulum; Myofibrils; Thin filaments; Thick filaments; Sarcomeres; Actin; Myosin; Posture; Movement; Gross movement; Fine movement; Protection; Vision; Breathing; temperature regulation; Tendon; Fasciae; Cerebral motor cortex; Motor neurons; Spinal cord; Muscle contraction; Trigger; Contraction; relaxation; Sliding filament theory of muscle contraction; Neuromuscular junction; The energy needed for contraction; Adenosine triphosphate (ATP); Creatine phosphate; Aerobic and anaerobic respiration; Lactic acid; Flexion and extension; Abduction and adduction; Lateral and medial rotation; Pronation and supination; Dorsiflexion and plantarflexion; Inversion and Eversion; Circumduction; Insertion and origin; Isotonic and isometric contractions; Head and face; Frontalis; Corrugator; Orbicularis oculi; Procerus; Nasalis; Levator labii superioris; Zygomaticus minor; zygomaticus major; Buccinator; Orbiculus oris; Risorius; Platysma; Depressor anguli oris; Depressor labii inferioris; Mentalis; Temporalis; Masseter; Neck - platysma muscle; Body; Chest and back; Trapezius; Deltoid; Pectoralis major; Latissimus dorsi; Rectus abdominus; External obliques; Spine and rib cage; Erector spinae; Intercostals; Arm; Biceps; Triceps; Brachioradialis; Extensor carpi radialis longus; Hand; Abductor pollicis brevis; Adductor pollicis; Flexor pollicis brevis; Opponens pollicis; Buttock; Gluteus maximus; Gluteus medius; Upper leg; Hamstrings; Pectineus; Quadriceps; Sartorius; Lower leg; Gastrocnemius; Soleus; Foot; Extensor digitorum brevis; Extensor hallucis brevis; Flexor Digiti Minimi Brevis; Muscle atrophy; Muscular dystrophy; Fibromyalgia; Myositis; Cramp; Tendonitis; Shin splints; Sprain; Lateral epicondylitis.*	

Syllabus Topic 5	The Nervous System
Learning Outcome - The learner will:	understand the structure, function and pathology of the nervous system
Indicative content:	
Assessment Criteria: The Candidate will know: The functions of the nervous system; Neurons; Divisions of the nervous system; The central nervous system; The brain; The spinal cord; The peripheral nervous system; The somatic nervous system; The autonomic nervous system; Divisions of the autonomic nervous system; The sympathetic nervous system; The parasympathetic nervous system; Stress and the nervous system; Interrelationship with the nervous system and other systems of the body; Diseases and disorders of the nervous system. *Types of neurons; Structure of a neuron; Recap of structure of a neuron; Synaptic transmission; Recap of synaptic transmission; Neurons and nerves; Functions of different parts of the brain; Structures of the brain; Ventricles; Cerebrum; The hemispheres and lobes of the cerebrum; Cerebral cortex; White matter; Grey matter; Meninges; Cerebellum; Hippocampus; Amygdala; Thalamus; Hypothalamus; Pituitary gland; Brainstem; Structure of the spinal cord; Nerves in the peripheral nervous system; Position of nerves in the peripheral nervous system; Cranial nerves; Spinal nerves; The somatic nervous system; The autonomic nervous system; Functions of the sympathetic and parasympathetic nervous systems; Recap of the divisions of the nervous system; Stress and the nervous system; Interrelationship with other body systems; Neuralgia; Neuritis/Neuropathy; Sciatica; Bell's palsy; Parkinson's disease; Myalgic encephalomyelitis (ME); Cerebral palsy; Multiple sclerosis (MS); Motor neurone disease.*	

Syllabus Topic 6	The Eyes and Ears
Learning Outcome - The learner will:	understand the structure, function and pathology of the eye and the ear
Indicative content:	
Assessment Criteria: The Candidate will know: The Eye; Structure of the eye, Function of the eye; Protection and lubrication of the eye; How light enters the eye; Vision; Diseases and disorders of the eye; The Ear; Structure of the ear; Outer ear. Middle er; Inner ear; Function of the ear; The path of sound; Diseases and disorders of the ear. *Eyelid; tear duct; Lacrimal caruncle; Iris; Pupil; Lens; Cornea; anterior chamber; Macula; Fovea centralis; Ciliary body; Choroid; Retina; Macula; Fovea; Optic disc; Optic nerve; Sclera; Rod cells; Cone cells; Aqueous humor; Vitreous humor; Electrical impulses; Optic nerve; The visual cortex; Photoreceptors; Scotomas; Hyperopia; Myopia; Astigmatism; Macular degeneration; Cataracts; Diabetic retinopathy; Glaucoma; Auricle; Helix; Concha; Lobule; Fossa; External auditory canal; Tragus; Tympanic membrane; Auditory ossicles; Malleus; Incus; Stapes; Tympanic cavity; Cochlea; Semi-circular canals; Vestibule; Organ of Corti; Auditory nerve; Eustachian tube; Hearing; balance; Ear wax (cerumen) build up and blockage; Tinnitus; Hearing loss; Presbycusis; Noise induced hearing loss.*	

Syllabus Topic 7	The Endocrine System
Learning Outcome - The learner will:	understand the structure, function and pathology of the endocrine system
Indicative content:	
Assessment Criteria: The Candidate will know: The function of hormones; Key hormones; Hormones and target cells; Position and function of endocrine glands; Interrelationship between the endocrine system and other systems of the body; endocrine diseases and disorders; Diseases and disorders associated with hormonal imbalance. *Testosterone; Progesterone; Estrogen; Dopamine; Serotonin; Melatonin; Epinephrine; Insulin; Glucagon; Aldosterone; Norepinephrine; Cortisol; Thyroxine; Leptin; Corticotropin-releasing hormone (CRH); Gonadotrophin-releasing hormone (GnRH); Growth hormone-releasing hormone (GHRH); Human chorionic gonadotropin (hCG); Human placental lactogen (hPL); Anti-diuretic hormone (ADH); Somatostatin; Thyrotropin-releasing hormone (TRH); Adrenocorticotropic hormone; Gonadotrophins; Prolactin; Vasopressin; Oxytocin; Triiodothyronine (T3); Thyroxine (T4); Calcitonin; Thymosin; Hormone receptors; Endocrine glands in the brain; Hypothalamus; Pituitary gland; Pineal gland; Thyroid gland; Parathyroid; Thymus; Adrenal glands; Pancreas; Ovaries; Testes; Placenta; Link with the Reproductive System, Cardiovascular System, Digestive System, Nervous System, The Skin; Hyposecretion; Hypersecretion; Hormonal imbalance; Hyperthyroidism; Cushing's syndrome; Acromegaly; PCOS (Polycystic Ovary Syndrome); Addison's syndrome; Type 1 diabetes; Type 2 diabetes; Amenorrhea; Endometriosis.*	

Syllabus Topic 8	The Respiratory System
Learning Outcome - The learner will:	understand the structure, function and pathology of the respiratory system
Indicative content:	
Assessment Criteria: The Candidate will know: Oxygen in the body; Functions of the respiratory system; Upper and lower respiratory tract; The conductive pathway of air; The biochemical process of respiration; Diseases and disorders of the respiratory system *Cleaning and warming the air; Production of sound; Bronchi, bronchioles and alveoli; Nasal cavity, sinuses and turbinates; Oral cavity, pharynx and larynx; Trachea; Lungs and bronchi; Pleural cavity and pleura; Diaphragm and intercostal muscles; External and internal respiration; Pulmonary circulation and systemic circulation; Pulmonary loop; Systemic loop; Control of respiration; Neural control of respiration; Respiratory chemoreceptors; Chronic Obstructive Pulmonary Diseases (COPD); Rhinitis and sinusitis; Asthma; Pneumonia; Pleurisy; Tuberculosis; Lung Cancer.*	

Syllabus Topic 9	The Cardiovascular System
Learning Outcome - The learner will:	understand the structure, function and pathology of the cardiovascular system
Indicative content:	
Assessment Criteria: The Candidate will know: The functions of the Cardiovascular System; Blood; Circulatory loops; Heart; Blood Vessels; Position of blood vessels in the body; Heartbeat; Blood pressure; Diseases and disorders of the cardiovascular system; Blood disorders. *Transportation; Protection; Regulation; Blood plasma; White blood cells (leukocytes); Platelets (thrombocytes); Red blood cells (erythrocytes); Chambers of the heart; Right and left atrium; Right and left ventricle; The heart wall; Endocardium; Myocardium; Pericardium; Pericardial fluid; Visceral pericardium; Heart valves; atrioventricular (AV) valves; Tricuspid valve; Mitral valve (bicuspid valve); Semilunar (SL) valves; Pulmonary valve; Aortic valve; Structure of the heart; Inferior vena cava; Superior vena cava; Left pulmonary artery; Right pulmonary artery; Left pulmonary vein; Right pulmonary vein; Aorta; Circulation of blood through the heart; Pulmonary circulation; Systemic circulation; Structure of arteries and veins; connective tissue; smooth muscle cells; valves; endothelium; endocardium; Arteries and Arterioles; Veins and Venules; Capillaries; Main arteries and veins of the head and neck; Main arteries and veins of the body; Coronary circulation; Coronary sinus; Anterior cardiac vein; Hepatic circulation: Hepatic artery; Hepatic portal vein; Sinus rhythm; Neural control of the heart; Sinoatrial node; Atrioventricular node; Bundle of His; Cardiac cycle; Atrial systole; Ventricular systole; Diastole; Regulation of Blood Pressure; Measuring blood pressure; Hypertension and hypotension; Cardiovascular disease (CVD); Coronary heart disease; Stroke; Peripheral arterial disease; Aortic disease; Blood disorders; White blood cell disorders; Red blood cell disorders; Platelet cell disorders.*	

Syllabus Topic 10	The Lymphatic System
Learning Outcome - The learner will:	understand the structure, function and pathology of the lymphatic system
Indicative content:	
Assessment Criteria: The Candidate will know: The structure of the lymphatic system; Functions of the lymphatic system; Lymphatic and cardiovascular systems; Lymphatic circulation; Lymph (lymphatic fluid); Organs of the lymphatic system; Lymphatic system and the immune system; Diseases and disorders of the lymphatic system. *Lymphatic capillaries and vessels; Endothelial cells; Endothelial flaps; Lymph nodes; Capsule; Cortex; Medulla; Lymphatic trunks; Jugular lymph trunks; Subclavian lymph trunks; Broncho mediastinal lymph trunks; Lumbar lymph trunks; Intestinal lymph trunk; Lymphatic ducts; Left thoracic duct; right lymphatic duct; Cisterna chyli; Adenoids; Tonsils; Thymus; Spleen; Peyer's patches; Appendix; Phagocytes; Lymphocytes; Maintaining fluid levels; transportation and removal of waste; protection against infection and disease; Leukocytes; Phagocytes; Phagocytosis; Lymphocytes; T cells; B cells; Absorption of fat from the digestive tract; Lymph; Plasma; Interstitial fluid; Oedema (water retention); Lymphedema; Hodgkin lymphoma (Hodgkin's disease); Autoimmune diseases; Type 1 diabetes; Rheumatoid arthritis; Psoriasis/psoriatic arthritis; Multiple sclerosis; Inflammatory bowel disease (IBD); Addison's disease; Graves' disease.*	

Syllabus Topic 11	The Digestive System
Learning Outcome - The learner will:	understand the structure, function and pathology of the digestive system
Indicative content:	
Assessment Criteria: The Candidate will know: The function of the digestive system; Structure of the digestive system; Gastrointestinal (GI) Tract; Supplementary organs of the digestive system; Mechanical digestion; Chemical digestion; Absorption; Diseases and Disorders of the Digestive System. *Mouth; Teeth; Incisors; Canines; Premolars; Salivary glands; Parotid glands; Submandibular glands; Sublingual glands; Tongue and Palate; Uvula; Epiglottis; Pharynx (throat); Nasopharynx; Oropharynx; Hypopharynx; Esophagus; Lower esophagus; Stomach; Cardia; Fundus body; Pylorus; Pyloric antrum; Pyloric canal; Rugae; Duodeum; Small intestine; Sections of the small intestine; Jejunum; Illeum; Mucosa; Villi; Microvilli; Large intestine; Cecum; Colon; Rectum; Anus; Liver; Gallbladder; Bile; Pancreas; Appendix; Gastric juice; Chyme; Hydrochloric acid; Enzymes involved in chemical digestion; Protese; Lipase; Amylase; Lactase; Sucrase; Maltase; Ingestion; Peristalsis; Bolus; Swallowing and peristalsis; Digestion in the stomach; Defecation; Constipation; Diarrhoea; Irritable bowel syndrome (IBS); Gastroesophageal reflux disease (GERD); Gall stones; Stomach ulcers; Coeliac disease; Cirrhosis; Gastrointestinal cancers.*	

Syllabus Topic 12	The Urinary System
Learning Outcome - The learner will:	understand the structure, function and pathology of the urinary system
Indicative content:	
Assessment Criteria: The Candidate will know: The functions of the urinary system; Structure of the urinary system; Structure of kidneys; Function of kidneys; Composition of urine; Urine and hydration; Diseases and disorders of the urinary system; Diseases and disorders of the kidneys. *Filtering waste products; Creatinine; Urea; Uric acid; Maintaining levels of water and electrolytes; Production of hormones; Renin; Erythropoietin; Activation of vitamin D; Regulation of blood pressure; Kidneys; Renal capsule; Renal cortex; Renal Medulla; Renal pyramids; Renal pelvis; Ureter; Bladder; Urethra; Nephron; Structure of the nephron; Bowman's capsule; Renal artery; Distal convoluted tubule; Reabsorption; Secretion; Renal corpuscle; Glomerulus; Renal tubules; Proximal convoluted tubule; Loop of Henle; Colour of urine and hydration; Colour of urine and its indications; Electrolytes; Uric acid; Creatinine; Urinary tract infections; Chronic kidney disease; Kidney failure; Urinary tract infections; Nephritis; Kidney stones; Cancers of the urinary system.*	

Syllabus Topic 13	The Reproductive System
Learning Outcome - The learner will:	understand the structure, function and pathology of the reproductive system
Indicative content:	
Assessment Criteria: The Candidate will know: The structure and function of the female reproductive system; Structure and function of the male reproductive system; Structure and function of the breast; Menstruation; Conception; Pregnancy; Labour; Birth; Diseases and disorders of the reproductive system. *Uterus; Fallopian tubes; Cervix; Ovary; Vagina; Vulva; Labia majora; Labia minora; Clitoris; Penis; Urethra; Prostate gland; Scrotum; Testes; Epididymis; Vas deferens; Seminal vesicle; Breast glands; Lactiferous ducts; Suspensory ligaments; Fatty tissue; Lactiferous ducts; Nipple; Areola; Menstrual cycle; Follicular phase; Luteal phase; Ovulatory phase; luteinizing hormone (LH), follicle-stimulating hormone (FSH), Estrogen; Progesterone; Corpus luteum; Corpus albicans; Gamete; Ova, Sperm; Sperm transport; Egg transport; Fertilisation; Zygote; Mitosis; Embryo; Blastocyst; Implantation; Signs of pregnancy; The uterus, placenta and umbilical cord; The three trimesters; Infertility; Erectile dysfunction; Problems with ovulation; Dysmenorrhoea; Amenorrhoea; Pre-menstrual syndrome (PMS); Premenstrual dysphoric disorder (PMDD); Endometriosis; Polycystic ovary syndrome (PCOS); Ectopic pregnancy; Mastitis; Common cancers of the reproductive system.*	