VTCT Level 3 Award in Anatomical and Physiological Knowledge of Body Systems

Accreditation start date:	**1 August 2010**
Credit value:	**7**
Total Qualification Time (TQT):	**70**
Guided learning hours (GLH):	**60**
Qualification number:	**500/8645/5**

Statement of unit achievement

By signing this statement of unit achievement you are confirming that all learning outcomes, assessment criteria and range statements have been achieved under specified conditions and that the evidence gathered is authentic.

This statement of unit achievement table must be completed prior to claiming certification.

Unit code	Date achieved	Learner signature	Assessor initials	IQA signature (if sampled)
Mandatory unit				
UV30434				

The qualification

Introduction

The VTCT Level 3 Award in Anatomical and Physiological Knowledge of Body Systems is a qualification that has been specifically designed to give you knowledge and understanding of the main systems of the body.

This knowledge and understanding is embedded in many beauty and complementary therapy qualifications. You will also learn about further career pathways in allied healthcare fields.

National Occupational Standards (NOS)

Units in this qualification have been mapped to the relevant NOS (where applicable). This qualification is regulated on the Regulated Qualifications Framework.

This qualification is approved and supported by the Hairdressing and Beauty Industry Authority (HABIA), the standard setting body for hair, beauty, nails and spa qualifications.

Progression

When you have successfully completed this qualification you will have the opportunity to progress to the following VTCT qualifications:

- Level 3 NVQ Diploma in Beauty Therapy Massage
- Level 3 NVQ Diploma in Beauty Therapy General

Progression opportunities also exist in the form of specialist VTCT vocationally related qualifications:

- Level 3 Diploma in Massage Therapy
- Level 3 Diploma in Beauty Therapy Treatments
- Level 3 Diploma in Complementary Therapies
- Level 3 Diploma in Reflexology
- Level 3 Diploma in Aromatherapy
- Level 3 Diploma in Body Massage
- Level 3 Diploma in Spa and Body Treatments
- Level 3 Certificate in Swedish Massage
- Level 3 Certificate in Stone Therapy Massage
- Level 3 Certificate in Indian Head Massage
- Level 3 Certificate in Massage Using Pre-Blended Aromatherapy Oils

Qualification structure

Total credits required - 7

All mandatory units must be completed.

Mandatory unit - 7 credits				
VTCT unit code	Ofqual unit reference	Unit title	Credit value	GLH
UV30434	J/601/3569	Anatomical and physiological knowledge of body systems	7	60

Guidance on assessment

This book contains the mandatory units that make up this qualification. Optional units will be provided in additional booklets (if applicable). Where indicated, VTCT will provide assessment materials. Assessments may be internal or external. The method of assessment is indicated in each unit.

Internal assessment

(any requirements will be shown in the unit)

Assessment is set, marked and internally quality assured by the centre to clearly demonstrate achievement of the learning outcomes. Assessment is sampled by VTCT external quality assurers.

External assessment

(any requirements will be shown in the unit)

Externally assessed question papers completed electronically will be set and marked by VTCT.

Externally assessed hard-copy question papers will be set by VTCT, marked by centre staff and sampled by VTCT external quality assurers.

Assessment explained

VTCT courses are assessed and quality assured by centre staff. Work will be set to improve your practical skills, knowledge and understanding. For practical elements, you will be observed by your assessor. All your work must be collected in a portfolio of evidence and cross-referenced to requirements listed in this record of assessment book.

Your centre will have an internal quality assurer whose role is to check that your assessment and evidence is valid and reliable and meets VTCT and regulatory requirements.

An external quality assurer, appointed by VTCT, will visit your centre to sample and quality-check assessments, the internal quality assurance process and the evidence gathered. You may be asked to attend on a different day from usual if requested by the external quality assurer.

This record of assessment book is your property and must be in your possession when you are being assessed or quality assured. It must be kept safe. In some cases your centre will be required to keep it in a secure place. You and your course assessor will together complete this book to show achievement of all learning outcomes, assessment criteria and ranges.

Creating a portfolio of evidence

As part of this qualification you are required to produce a portfolio of evidence. A portfolio will confirm the knowledge, understanding and skills that you have learnt. It may be in electronic or paper format.

Your assessor will provide guidance on how to prepare the portfolio of evidence and how to show practical achievement, and understanding of the knowledge required to successfully complete this qualification. It is this booklet along with the portfolio of evidence that will serve as the prime source of evidence for this qualification.

Evidence in the portfolio may take the following forms:

- Observed work
- Witness statements
- Audio-visual media
- Evidence of prior learning or attainment
- Written questions
- Oral questions
- Assignments
- Case studies

All evidence should be documented in the portfolio and cross referenced to unit outcomes. Constructing the portfolio of evidence should not be left to the end of the course.

Unit assessment methods

This section provides an overview of the assessment methods that make up each unit in this qualification. Detailed information on assessment is provided in each unit.

Mandatory units				
		External	Internal	
VTCT unit code	Unit title	Question paper(s)	Observation(s)	Assignment(s)
UV30434	Anatomical and physiological knowledge of body systems	1	✗	✓

Unit glossary

	Description
VTCT product code	All units are allocated a unique VTCT product code for identification purposes. This code should be quoted in all queries and correspondence to VTCT.
Unit title	The title clearly indicates the focus of the unit.
National Occupational Standards (NOS)	NOS describe the skills, knowledge and understanding needed to undertake a particular task or job to a nationally recognised level of competence.
Level	Level is an indication of the demand of the learning experience, the depth and/or complexity of achievement and independence in achieving the learning outcomes.
Credit value	This is the number of credits awarded upon successful achievement of all unit outcomes. Credit is a numerical value that represents a means of recognising, measuring, valuing and comparing achievement.
Guided learning hours (GLH)	The activity of a learner in being taught or instructed by - or otherwise participating in education or training under the immediate guidance or supervision of - a lecturer, supervisor, tutor or other appropriate provider of education or training.
Total qualification time (TQT)	The number of hours an awarding organisation has assigned to a qualification for Guided Learning and an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study, or any other form of participation in education or training. This includes assessment, which takes place as directed - but, unilke Guided Learning, not under the immediate guidance or supervision of - a lecturer, supervisor, tutor or other appropriate provider of education or training.
Observations	This indicates the minimum number of observations required to achieve the unit.
Learning outcomes	The learning outcomes are the most important component of the unit, they set out what is expected in terms of knowing, understanding and practical ability as a result of the learning process. Learning outcomes are the results of learning.
Evidence requirements	This section provides guidelines on how evidence must be gathered.
Maximum service times	The maximum time in which a particular service or practical element must be completed.
Observation outcome	An observation outcome details the practical tasks that must be completed to achieve the unit.
Knowledge outcome	A knowledge outcome details the theoretical requirements of a unit that must be evidenced through oral questioning, a mandatory written question paper or portfolio of evidence.
Assessment criteria	Assessment criteria set out what is required, in terms of achievement, to meet a learning outcome. The assessment criteria and learning outcomes are the components that inform the learning and assessment that should take place. Assessment criteria define the standard expected to meet learning outcomes.
Range	The range indicates what must be covered. Ranges must be practically demonstrated in parallel to the unit's observation outcomes.

UV30434

Anatomical and physiological knowledge of body systems

This unit will allow you to gain knowledge of the anatomical structure and the physiological function of the body systems; integumentary, skeletal, circulatory, lymphatic, muscular, nervous, respiratory and digestive systems. You will also investigate aspects of dermatology, microbiology and trichology related to this topic.

Level

3

Credit value

7

GLH

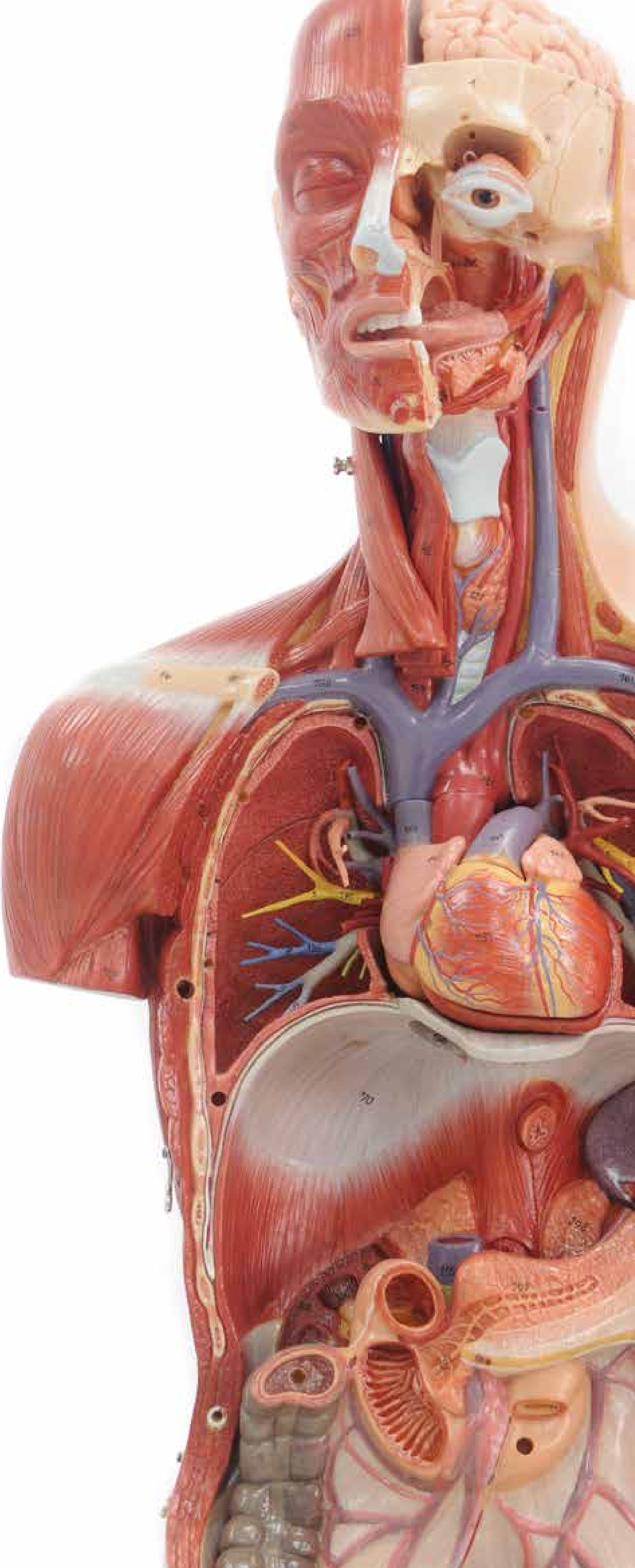
60

Observation(s)

0

External paper(s)

1



Anatomical and physiological knowledge of body systems

Learning outcomes

On completion of this unit you will:

1. Be able to have knowledge of the skin, nails and hair
2. Be able to have knowledge of the skeletal system
3. Be able to have knowledge of the muscular system
4. Be able to have knowledge of the nervous system
5. Be able to have knowledge of the endocrine system
6. Be able to have knowledge of the respiratory system
7. Be able to have knowledge of the cardiovascular system
8. Be able to have knowledge of the lymphatic system
9. Be able to have knowledge of the digestive system
10. Be able to have knowledge of further career pathways

Evidence requirements

1. *Knowledge outcomes*
   There must be evidence that you possess all the knowledge and understanding listed in the 'Knowledge' section of this unit. This evidence may include projects, assignments, case studies, reflective accounts, oral/written questioning and/or other forms of evidence.
2. *Tutor/Assessor guidance*
   You will be guided by your tutor/assessor on how to achieve learning outcomes in this unit. All outcomes must be achieved.
3. *External paper*
   Knowledge and understanding in this unit will be assessed by an external paper. The criteria that make up this paper are highlighted in white throughout this unit.
   There is one external paper that must be achieved.

Developing knowledge

Achieving knowledge outcomes

You will be guided by your tutor and assessor on the evidence that needs to be produced. Your knowledge and understanding will be assessed using the assessment methods listed below:

- Observed work
- Witness statements
- Audio-visual media
- Evidence of prior learning or attainment
- Written questions
- Oral questions
- Assignments
- Case studies

Where possible your assessor will integrate knowledge outcomes into practical observations through oral questioning.

Achieving the external paper

The external paper will test your knowledge of the criteria highlighted in white. **A pass mark of 70% must be achieved.** Criteria not achieved will be identified to your tutor/assessor. You will then be orally questioned or asked to produce other forms of evidence as **all unit criteria must be achieved.**

Your assessor will complete the following table when the 70% pass mark has been achieved.

Paper	Date achieved	Assessor initials
1 of 1		

Knowledge

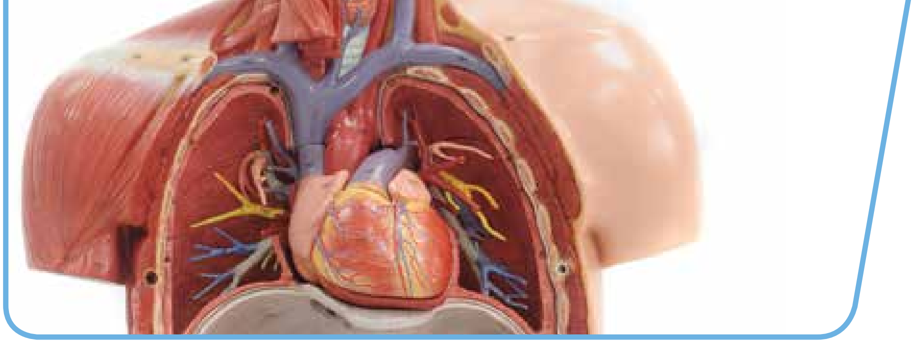
Outcome 1

Be able to have knowledge of the skin, nails and hair

You can:	Portfolio reference / Assessor initials*
a. Describe the structure of the epidermis and dermis	
b. Describe the structure of the nail	
c. Describe the structure of the hair	
d. Explain the stages of hair growth	
e. Describe the function of the skin	
f. Describe the function of the hair	
g. Describe the function of the nail	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.



Outcome 2

Be able to have knowledge of the skeletal system

You can:	Portfolio reference / Assessor initials*
a. Describe the classification bones	
b. Identify the position of the bones in the skeletal system	
c. Describe the function of the skeletal system	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.

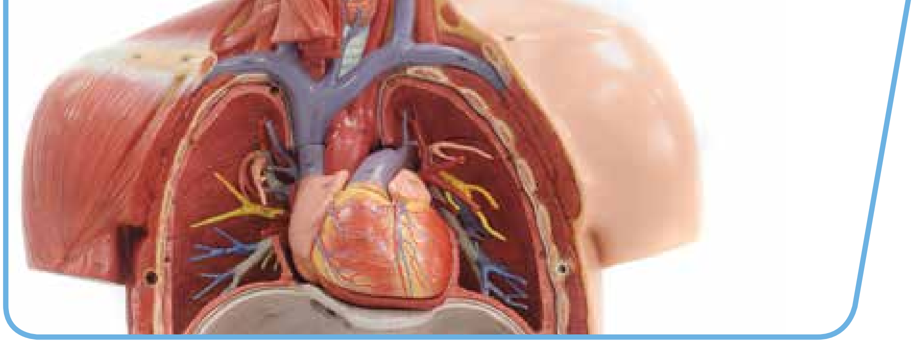
Outcome 3

Be able to have knowledge of the muscular system

You can:	Portfolio reference / Assessor initials*
a. Identify the position of the major muscles of the head, neck and body	
b. Describe the basic function of the major muscles of the head, neck and body	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.



Outcome 4

Be able to have knowledge of the nervous system

You can:	Portfolio reference / Assessor initials*
a. Describe the components of the central nervous system	
b. Describe the structure of sensory and motor neurone	
c. Describe the function of sensory and motor neurone	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.

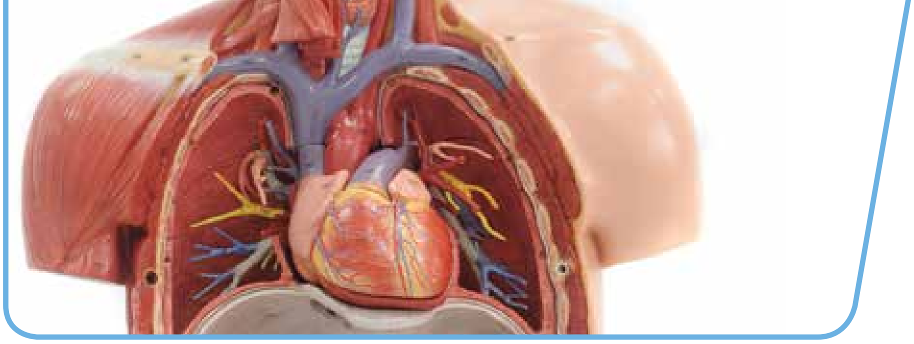
Outcome 5

Be able to have knowledge of the endocrine system

You can:	Portfolio reference / Assessor initials*
a. Identify the structure of the endocrine system	
b. Describe the function of the endocrine system	
c. Identify the effects and influences of the endocrine system on the body	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.



Outcome 6

Be able to have knowledge of the respiratory system

You can:	Portfolio reference / Assessor initials*
a. Describe the structure of the respiratory system	
b. Describe the function of the lungs	
c. Describe the process of gaseous exchange	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.

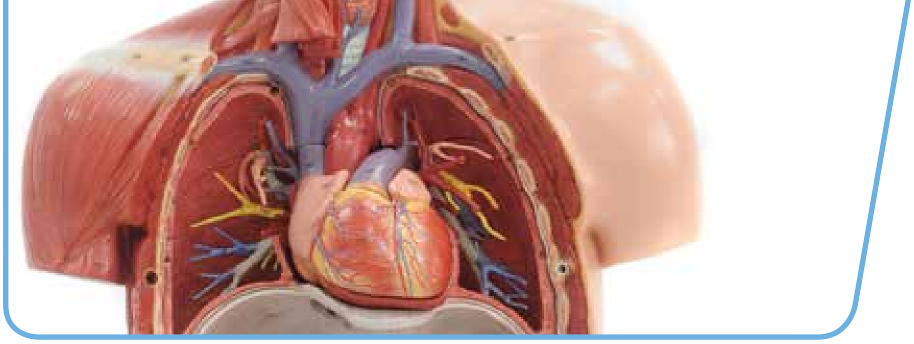
Outcome 7

Be able to have knowledge of the cardiovascular system

You can:	Portfolio reference / Assessor initials*
a. Describe the structure of the heart	
b. Describe the function of the cardiovascular system	
c. Identify different blood vessels	
d. Identify the composition of blood	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.



Outcome 8

Be able to have knowledge of the lymphatic system

You can:	Portfolio reference / Assessor initials*
a. Describe the function of the lymphatic system	
b. Identify the structure of lymph vessels	
c. Identify the major groups of lymphatic nodes	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.

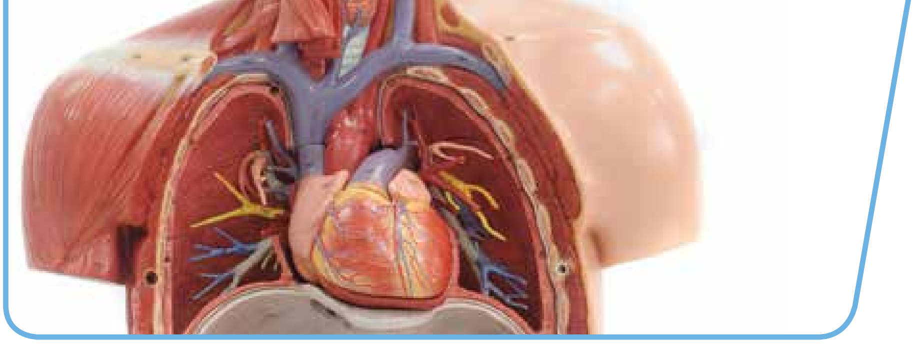
Outcome 9

Be able to have knowledge of the digestive system

You can:	Portfolio reference / Assessor initials*
a. Describe the structure of the main digestive organs	
b. Describe the function of the digestive system	
c. Describe the process of digestion	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.



Outcome 10

Be able to have knowledge of further career pathways

You can:	Portfolio reference / Assessor initials*
a. Identify career opportunities in trichology and dermatology	

**Assessor initials to be inserted if orally questioned.*

Requirements highlighted in white are assessed in the external paper.

Unit content

This section provides guidance on the recommended knowledge and skills required to enable you to achieve each of the learning outcomes in this unit. Your tutor/assessor will ensure you have the opportunity to cover all of the unit content.

Outcome 1: Be able to have knowledge of the skin, nails and hair

Epidermis:

Structure – stratum germinativum, stratum spinosum, stratum granulosum, stratum, lucidum, stratum corneum, keratinisation.

Dermis:

Structure – blood/lymph supply, papillary layer, reticular layer, collagen, elastin, macrophages, adipocytes, mast cells, fibroblasts, hair, dermal papilla, sebaceous glands and sebum, arrector pili muscle, sweat glands (eccrine and apocrine), sensory nerve endings.

Hypodermis: Structure – subcutaneous layer, adipose tissue, adipocytes.

Nail:

Structure – Nail root/matrix, mantle, plate, wall, grooves, bed, lunula, free edge, hyponychium, cuticle (eponychium, perionychium).

Functions – protection.

Hair:

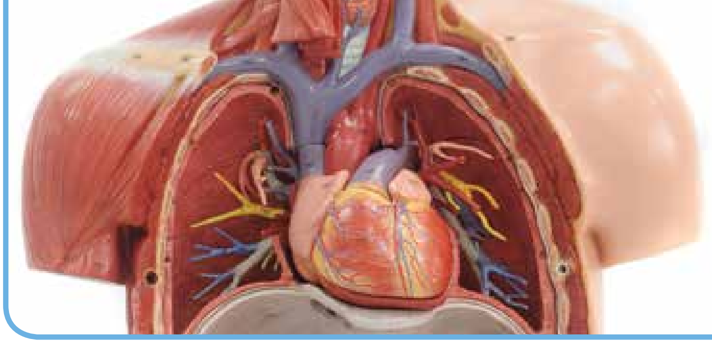
Structure – arrector pili muscle, hair follicle, inner root sheath (henle's layer, huxley's layer, cuticle layer), outer root sheath, vitreous membrane, connective tissue sheath, root (bulb/matrix, dermal papilla), sebaceous gland, shaft (medulla, cortex, cuticle).

Hair growth cycle – anagen, catagen, telogen.

Hair types – lanugo, vellus, terminal.

Hair functions – insulation and protection.

Functions of the skin: Secretion, heat regulation, absorption, protection, elimination, sensation, vitamin D formation, melanin production.



Outcome 2: Be able to have knowledge of the skeletal system

Bone structure:

Tissue types – compact, cancellous.

Cells of bone – osteocytes, osteoblasts, osteoclasts.

Long bone – epiphysis, diaphysis, red bone marrow, compact and cancellous tissue, periosteum.

Bone types: Long, short, flat, irregular, sesamoid.

Position of bones – appendicular skeleton:

Shoulder girdle – clavicle, scapula.

Upper limb – humerus, radius, ulna, carpals (scaphoid, lunate, triquetral, pisiform, trapezium, trapezoid, capitate, hamate), metacarpals, phalanges.

Pelvic girdle – ilium, ischium, pubis (innominate bones).

Lower limb – femur, patella, tibia, fibula, tarsals (talus, calcaneus, navicular, medial, intermediate and lateral cuniform, cuboid), metatarsals, phalanges.

Position of bones – axial skeleton:

Skull – frontal, occipital, parietal, sphenoid, ethmoid, temporal, nasal, zygomatic, maxilla, mandible, lacrimal, turbinator, palatine, vomer, hyoid.

Thoracic – ribs, sternum, vertebral columncervical, thoracic, lumbar, sacrum, coccyx, intervertebral disc.

Skeletal functions: Support, joints, movement, protection, attachment, mineral source, blood cell formation.

Joints: Fixed, slightly moveable, freely moveable (ball and socket, hinge, pivot, gliding, condyloid/saddle).

Outcome 3: Be able to have knowledge of the muscular system

Muscle types: Structure and function (voluntary, involuntary, cardiac).

Muscle functions: Contraction, relaxation, attachment, movement (flexion, extension, abduction, adduction, supination, pronation, rotation, circumduction, inversion, eversion, plantarflexion, dorsiflexion), tone, tension, fatigue.

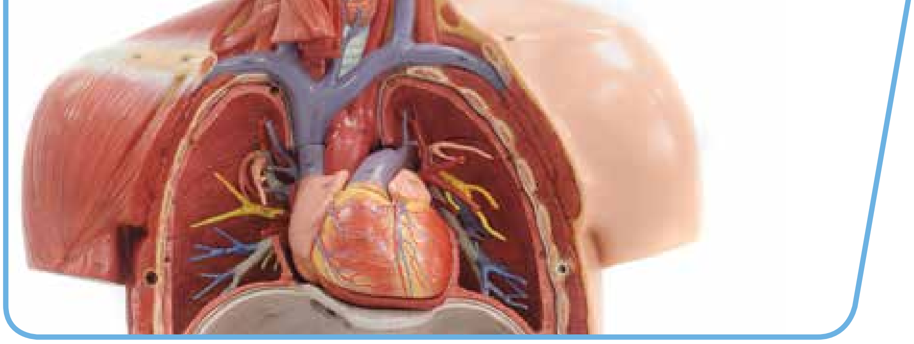
Muscles of the head, face, neck: Buccinator, corrugator, depressor labii anguli, depressor labii inferioris, frontalis, levator anguli oris, levator labii superioris, levator palpebrae, levator scapula, masseter, mentalis, nasalis, occipitalis, orbicularis oculi, orbicularis oris, platysma, procerus, pterygoids, risorius, sternocleidomastoid, temporalis, zygomaticus.

Muscle of the anterior trunk: Iliopsoas (iliacus and psoas), internal and external intercostals, internal and external obliques, pectoralis major/minor, rectus abdominus, serratus anterior, transversalis abdominus.

Muscles of the posterior trunk: Deltoid, erector spinae, gluteal group (maximus, medius, minimus), infraspinatus, latissimus dorsi, quadratus lumborum, rhomboids, splenius capitis, subscapularis, supraspinatus, teres major, teres minor, trapezius.

Muscles of the upper limb: Biceps, brachialis, brachioradialis, coracobrachialis, deltoid, extensor carpi digitorum, extensor carpi radialis, extensor carpi ulnaris, flexor carpi digitorum, flexor carpi radialis, flexor carpi ulnaris, pronator teres, supinator radii brevis, triceps.

Muscles of the lower limb: Adductors (longus, magnus, brevis), extensor digitorum longus, fibularis (peroneus) longus, flexor digitorum longus, flexor digitorum longus, flexor hallucis longus, gastrocnemius, gracilis, hamstrings (biceps femoris, semitendinosus, semimembranosus), piriformis, quadriceps (rectus femoris, vastus lateralis, vastus medialis, vastus intermedius), sartorius, soleus, tensor fascia latae, tibialis anterior, tibialis posterior.



Outcome 4: Be able to have knowledge of the nervous system

Nervous system structures and functions:

Central nervous system (CNS) – brain, spinal cord, white matter, grey matter, meninges (pia mater, arachnoid mater, subarachnoid space, dura mater), cerebrospinal fluid, blood brain barrier, cerebrum, cerebellum, thalamus, hypothalamus, pituitary, pineal, brain stem (midbrain, pons varolii, medulla oblongata).

Peripheral nervous system (PNS) – spinal nerves (31pairs), spinal nerve plexus (cervical, brachial, lumbar, sacral, coccygeal), cranial nerves (12 pairs).

Autonomic nervous system (ANS) – sympathetic and parasympathetic divisions.

Neuroglia: Types, location and function, schwann cells, oligodendrocytes, astrocytes.

Neurones:

Types, location and functions – sensory, motor, interneuron.

Structure – dendrite, cell body, axon, axon end terminals, neurotransmitters, myelin sheath, nodes of ranvier, neurolemma reflex arc, synapse, motor point.

Outcome 5: Be able to have knowledge of endocrine system

Endocrine glands: Location, structure and function, hypothalamus, pituitary, pineal, thyroid, parathyroids, thymus, pancreas (islets of langerhans), adrenals, ovaries, testes.

Hormones:

Functions – pituitary (oxytocin, vasopressin, growth hormone, adrenocorticotrophic hormone, luteinising hormone, follicle stimulating hormone, prolactin, melanin stimulating hormone), pineal (melatonin/serotonin), thyroid (triiodothyronine, thyroxine, calcitonin), parathyroids (parathormone), thymus (thymosin), pancreas – islets of langerhans (insulin, glucagon), adrenal cortex (glucocorticoids, mineralocorticoids, androgens), adrenal medulla (adrenalin, noradrenalin), ovaries (oestrogen, progesterone), testes (testosterone).

The effects and influences of the endocrine system on the body: The menstrual cycle, life stages (puberty, pregnancy, menopause), stress, disorders – acromegaly, Addison's disease, amenorrhoea, cretinism, Cushing's syndrome, diabetes insipidus, diabetes mellitus, gigantism, goitre, graves disease, actinomycete, hirsutism, myxedema, polycystic ovarian syndrome, seasonal affective disorder (SAD), stunted growth, virilism.

Outcome 6: Be able to have knowledge of the respiratory system

Structures of the respiratory system: Nose, nasal cavity, mucous membranes, nasopharynx, unfurnished, epiglottis, larynx, trachea, lungs, bronchi, bronchioles, alveoli, pleural membrane, intercostal muscles, diaphragm muscle, pulmonary circulation, brain (pons varolii, medulla oblongata), chemoreceptors.

Lung functions: Ventilation, inspiration, expiration, respiration, gaseous exchange.

Gaseous exchange: Internal respiration, external respiration, blood supply, transport, diffusion of oxygen and carbon dioxide.

Outcome 7: Be able to have knowledge of the cardiovascular system

Heart structure: Heart wall (endocardium, myocardium, pericardium), aorta, atria, bicuspid (mitral) valve, chordae tendineae, inferior and superior vena cava, papillary muscles, pulmonary artery, pulmonary vein, semilunar valves (aortic and pulmonary), septum, tricuspid valve, ventricles.

Functions of cardiovascular system: Transport, defence, clotting, regulation and homeostasis.

Blood vessels: Structure and function, arteries, arterioles, veins, venules, capillaries.

Circuits: Structure and function, pulmonary circulation, portal circulation, coronary circulation, systemic circulation.

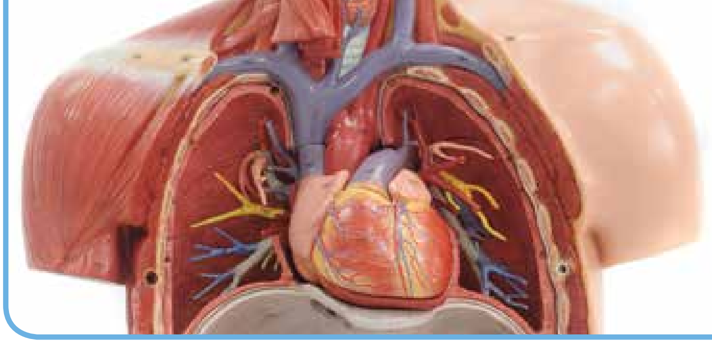
Major arteries of the head and neck: Carotid, facial, occipital, temporal.

Major veins of the head and neck: Jugular, occipital, temporal, maxillary, facial.

Major arteries of the body: Aorta, descending aorta, subclavian, carotid, pulmonary, hepatic, splenic, renal, mesenteric, iliac, vertebral, axillary, brachial, ulnar, radial, palmar arch, femoral, popliteal, anterior tibial, plantar arch.

Major veins of the body: Vena cava (inferior and superior), pulmonary, hepatic, splenic, renal, iliac, axillary, brachial, basilic, cephalic, subclavian, saphenous (long and short), venous arch, femoral, popliteal, posterior tibial, anterior tibial.

Composition of blood: Plasma, leucocytes (granulocytes and agranulocytes), erythrocytes, thrombocytes.



Outcome 8: Be able to have knowledge of the lymphatic system

Functions of the lymphatic system: Subsidiary circulation (lymph formation), immunity, return of lost plasma proteins to the blood, transport dietary lipids.

Lymphatic components: Structure and function – lymph, lymph capillaries, lymphatic vessels, lymph nodes, lymphatic trunks, lymphatic ducts (thoracic and right lymphatic duct), subclavian veins.

Lymphatic nodes: Location of axillary, cervical (superficial and deep), inguinal, intestinal, occipital, popliteal, post-auricular, pre-auricular (parotid), supratrochlear.

Other lymphoid tissue: Structure, location and function, appendix, Peyer's patches, spleen, tonsils, thymus.

Outcome 9: Be able to have knowledge of the digestive system

Digestive organs: Structure, location and function, alimentary canal (inner mucosa, submucosa, muscle layer, serous membrane), mouth, salivary glands, tongue, teeth, pharynx, oesophagus, stomach, small intestine (duodenum, jejunum, ileum), large intestine (caecum, ascending colon, transverse colon, descending colon, sigmoid colon, rectum, anus), liver, gall bladder, pancreas.

Functions of digestive system: Ingestion, digestion, absorption, assimilation, elimination, peristalsis.

Process of digestion:

Carbohydrates – polysaccharides, disaccharides, monosaccharides.

Proteins – polypeptides, peptones, amino acids.

Fats – fatty acids and glycerol. Vitamins, minerals, water, fibre, substrate, enzyme, villi (lacteals and blood capillaries).

Digestive juices: Structure and function, saliva, gastric juice, bile, pancreatic juice, intestinal juice.

Digestive enzymes: Location and action, salivary amylase, pepsin, trypsin, pancreatic amylase, pancreatic lipase, intestinal amylase, intestinal lipase, intestinal peptidases, maltase, sucrase, lactase. Hormones (gastrin).

Outcome 10: Be able to have knowledge of further career pathways

Further study options: Advanced beauty therapy, body massage, reflexology, aromatherapy, spa therapy, trichology, dermatology, quality management.