



## American Bowen Academy Online Course Outline

### Knowledge of Anatomy, Physiology and Pathology for Complementary Therapies

**Endorsed Vendor:** Essential Training Solutions

#### **Presentation Hours/CE Credits:**

Upon completion of the course.

- Counts for the required 100 A&P Hours for certification for Module students who do not have a background in anatomy and physiology
- 16 ABA-endorsed continuing education hours for Professional Bowenwork Practitioners.

**Cost:** \$425

**Pre-requisites:** Registered American Bowen Academy student. Completion of Module 01

**To register:** Go to <http://www.americanbowen.academy/classes/find-bowenwork-classes>. Use the pull-down menu to select Knowledge of Anatomy, Physiology and Pathology for Complementary Therapies

#### **Rationale:**

Course is offered to provide training for module students who do not have the requisite 100 hours of anatomy and physiology. Professional Bowenwork Practitioners can take the course to enhance their A&P knowledge.

#### **Presentation Aims and Outcomes:**

The aim of this course is to develop your knowledge and understanding of anatomy, physiology and pathology.

#### **Specific Learning Outcomes:**

On completion of this course student will:

1. Understand the organization of the body
2. Understand the anatomy, physiology and pathologies of the skin, hair and nails
3. Understand the anatomy, physiology and pathologies of the skeletal system
4. Understand the anatomy, physiology and pathologies of the muscular system
5. Understand the anatomy, physiology and pathologies of the nervous system
6. Understand the anatomy, physiology and pathologies of the endocrine system

7. Understand the anatomy, physiology and pathologies of the respiratory system
8. Understand the anatomy, physiology and pathologies of the cardiovascular system
9. Understand the anatomy, physiology and pathologies of the lymphatic system
10. Understand the anatomy, physiology and pathologies of the digestive system
11. Understand the anatomy, physiology and pathologies of the urinary system
12. Understand the anatomy, physiology and pathologies of the reproductive system

**Presentation Requirements:**

Student 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:

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

**Additional Resources/Readings:**

Student will receive two study manuals and a CD at no extra cost.

**Time allocation:**

This high-quality, comprehensive course is delivered totally online, is truly self-paced and no part of the course - even the final assessment - requires attendance. Students can take the online course in tandem with Academy module training. Students are able to take the body systems in any order they require. They invigilate the externally set final assessment using software that enables monitoring the student, the student's immediate environment and the student's screen via which the online assessment is being delivered.

# VTCT Level 3 Certificate in Anatomy, Physiology and Pathology for Complementary Therapies (QCF)

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Operational start date: **1 September 2012**  
Credit value: **13**  
Guided learning hours (GLH): **100**  
Qualification number: **600/4845/1**

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## Statement of unit achievement

By signing this statement of unit achievement you are confirming that all learning outcomes, assessment criteria and range statements (if/where applicable) 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	IV signature (if sampled)
Mandatory unit				
UV31299				

# The qualification

## Introduction

The VTCT Level 3 Certificate in Anatomy, Physiology and Pathology for Complementary Therapies (QCF) is a knowledge-based qualification which will provide you with a sound foundation to pursue a career as a complementary therapist.

This qualification will develop your knowledge and understanding of the organisation of the body, and the structure, function and pathologies of the skin, hair and nails.

You will also learn about the structure, function and pathologies of the human body systems including, the skeletal, muscular, nervous, endocrine, respiratory, cardiovascular, digestive, urinary and reproductive system.

## National Occupational Standards (NOS)

Units in this qualification have been mapped to the relevant NOS (where applicable). This qualification is accredited on the Qualifications and Credit Framework (QCF).

This qualification is approved and supported by Skills for Health, the sector skills council for health.

## Prerequisites

There are no formal prerequisite qualifications that you must have prior to undertaking this qualification.

Your centre will have ensured that you have the required knowledge, understanding and skills to enrol and successfully achieve this qualification.



## Progression

On completion of this qualification you may choose to undertake further study; qualifications you could progress to include:

- VTCT Level 3 Diploma in Complementary Therapies (QCF)
- VTCT Level 3 Diploma in Aromatherapy (QCF)
- VTCT Level 3 Diploma in Reflexology (QCF)
- VTCT Level 3 Diploma in Massage (QCF)

# Qualification structure

## Total credits required - 13

All mandatory units must be completed.

### Mandatory unit - 13 credits

VTCT unit code	Ofqual unit reference	Unit title	Credit value	GLH
UV31299	R/503/7640	Knowledge of anatomy, physiology and pathology for complementary therapies	13	94

# 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 verified by the centre to clearly demonstrate achievement of the learning outcomes. Assessment is sampled by VTCT external verifiers.

## 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 verifiers.

## Assessment explained

VTCT qualifications are assessed and verified 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 verifier whose role is to check that your assessment and evidence is valid and reliable and meets VTCT and regulatory requirements.

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

This record of assessment book is your property and must be in your possession when you are being assessed or verified. 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.

Many frequently asked questions and other useful information are detailed in the VTCT Candidate's Handbook, which is available on the VTCT website at [www.vtct.org.uk/students](http://www.vtct.org.uk/students). Other questions should be addressed to the tutor, lecturer or assessor.

## Case studies

There is no case study requirement for this qualification.

# 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 unit				
		External	Internal	
VTCT unit code	Unit title	Question paper(s)	Observation(s)	Portfolio of Evidence
UV31299	Knowledge of anatomy, physiology and pathology for complementary therapies	2	✗	✓

# Unit glossary

	Description
<b>VTCT product code</b>	All units are allocated a unique VTCT product code for identification purposes. This code should be quoted in all queries and correspondence to VTCT.
<b>Unit title</b>	The title clearly indicates the focus of the unit.
<b>National Occupational Standards (NOS)</b>	NOS describe the skills, knowledge and understanding needed to undertake a particular task or job to a nationally recognised level of competence.
<b>Level</b>	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. There are 9 levels of achievement within the Qualifications and Credit Framework (QCF).
<b>Credit value</b>	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.
<b>Guided learning hours (GLH)</b>	The number of hours of teacher-supervised or directed study time required to teach a qualification or unit of a qualification.
<b>Observations</b>	This indicates the minimum number of competent observations, per outcome, required to achieve the unit.
<b>Learning outcomes</b>	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.
<b>Evidence requirements</b>	This section provides guidelines on how evidence must be gathered.
<b>Observation outcome</b>	An observation outcome details the tasks that must be practically demonstrated to achieve the unit.
<b>Knowledge outcome</b>	A knowledge outcome details the theoretical requirements of a unit that must be evidenced through oral questioning, a mandatory written question paper, a portfolio of evidence or other forms of evidence.
<b>Assessment criteria</b>	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.
<b>Range</b>	The range indicates what must be covered. Ranges must be practically demonstrated in parallel with the unit's observation outcomes.

# UV31299

Knowledge of anatomy,  
physiology and pathology for  
complementary therapies

The aim of this unit is to develop your knowledge and understanding of anatomy, physiology and pathology.

Level

**3**

Credit value

**13**

GLH

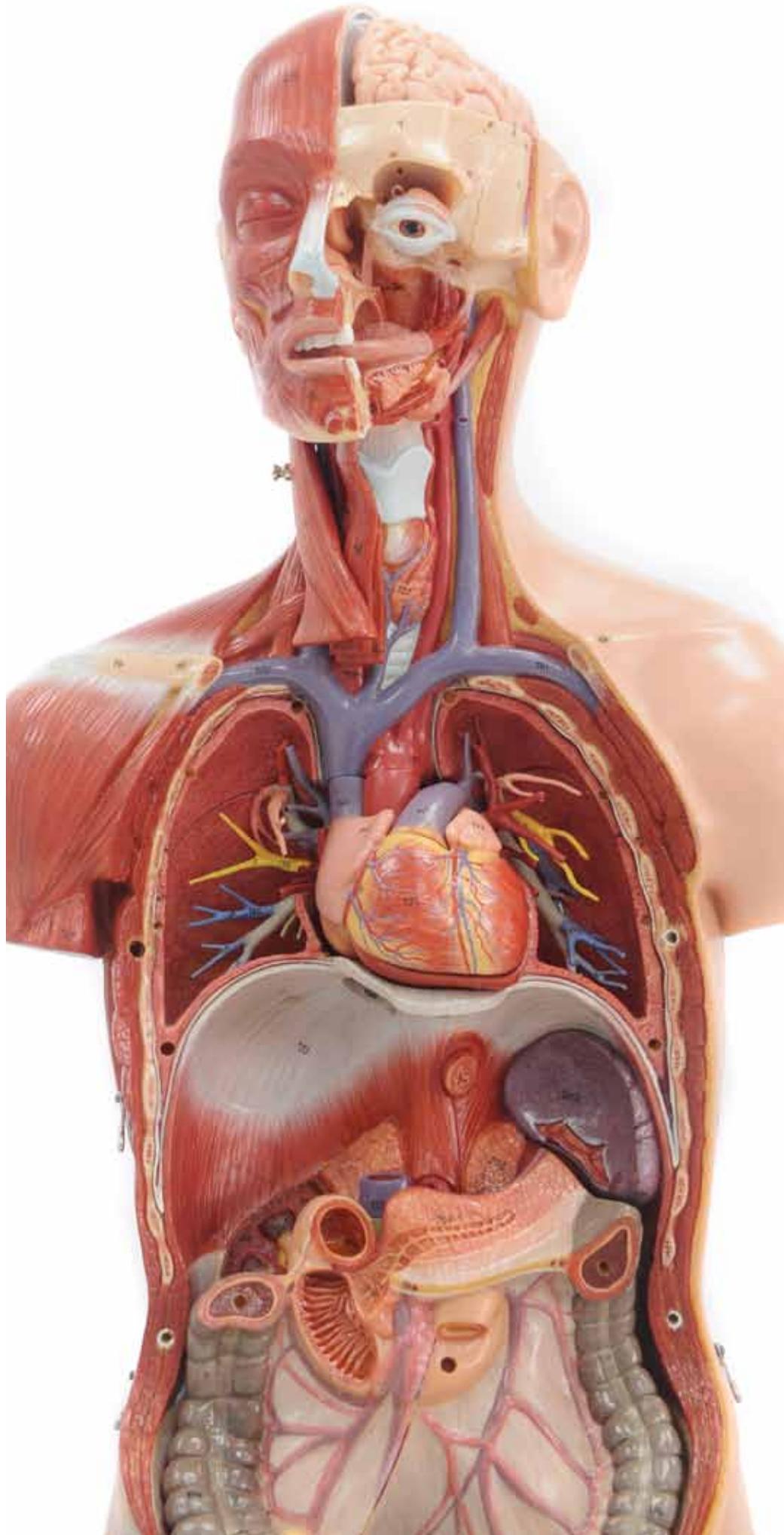
**94**

Observation(s)

**0**

External paper(s)

**2**



# Knowledge of anatomy, physiology and pathology for complementary therapies

## Learning outcomes

On completion of this unit you will:

1. Understand the organisation of the body
2. Understand the anatomy, physiology and pathologies of the skin, hair and nails
3. Understand the anatomy, physiology and pathologies of the skeletal system
4. Understand the anatomy, physiology and pathologies of the muscular system
5. Understand the anatomy, physiology and pathologies of the nervous system
6. Understand the anatomy, physiology and pathologies of the endocrine system
7. Understand the anatomy, physiology and pathologies of the respiratory system
8. Understand the anatomy, physiology and pathologies of the cardiovascular system
9. Understand the anatomy, physiology and pathologies of the lymphatic system
10. Understand the anatomy, physiology and pathologies of the digestive system
11. Understand the anatomy, physiology and pathologies of the urinary system
12. Understand the anatomy, physiology and pathologies of the reproductive system

## 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. In most cases this can be done by professional discussion and/or oral questioning. Other methods, such as projects, assignments and/or reflective accounts may also be used.

**A minimum of three pathologies (conditions) for each body system must be evidenced in your portfolio.**

### 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 papers*

Knowledge and understanding in this unit will be assessed by external papers. The criteria that make up these papers are highlighted in white throughout this unit. **There are two external papers that must be achieved.**

The external papers assess anatomy and physiology only, pathology is not assessed by this method.

# 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\*:

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

*\*This is not an exhaustive list.*

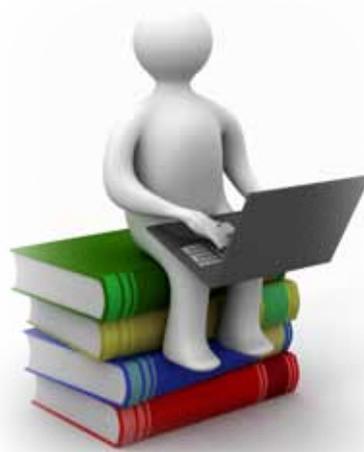
## Achieving the external paper

The external papers will test your knowledge of the criteria highlighted in white. **A pass mark of 70% must be achieved for each paper.** 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 marks have been achieved.

Paper	Date achieved	Assessor initials
1 of 2		
2 of 2		

# Knowledge



## Learning outcome 1

### Understand the organisation of the body

You can:	Portfolio reference / Assessor initials*
a. Describe the anatomical regions of the body	
b. Describe the planes of the body	
c. Describe the directional terms of the body	
d. Describe the quadrants of the body	
e. Describe the chemical organisation of the body	
f. Describe the structure, function and types of cell	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.



## Learning outcome 2

### Understand the anatomy, physiology and pathologies of the skin, hair and nails

You can:	Portfolio reference / Assessor initials*
a. Explain the structure, function, growth and repair of the skin	
b. Explain the structure, function and growth cycle of the hair	
c. Explain the structure, function and growth cycle of the nails	
d. Analyse the pathologies of the skin	
e. Analyse the pathologies of the hair	
f. Analyse the pathologies of the nails	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



### Learning outcome 3

## Understand the anatomy, physiology and pathologies of the skeletal system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and classification of bones	
b. Explain the structure, function and growth of the skeletal system	
c. Explain the types of joints and their range of movements	
d. Explain the functions of the arches of the feet	
e. Analyse the pathologies of the skeletal system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 4

### Understand the anatomy, physiology and pathologies of the muscular system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure, function, growth and repair of the muscular system	
b. Explain the location and action of muscle groups within the muscular system	
c. Explain the principles of muscle contraction	
d. Analyse the pathologies of the muscular system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 5

### Understand the anatomy, physiology and pathologies of the nervous system

You can:	Portfolio reference / Assessor initials*
a. Describe the structure and function of each component of the nervous system	
b. Analyse the pathologies of the nervous system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 6

### Understand the anatomy, physiology and pathologies of the endocrine system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and function of the endocrine system	
b. Explain the location of endocrine glands	
c. Explain the function of the endocrine glands	
d. Describe the hormones secreted from the endocrine glands and their target sites	
e. Analyse the pathologies of the endocrine systems	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 7

### Understand the anatomy, physiology and pathologies of the respiratory system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and function of the respiratory system	
b. Describe the stages of respiration	
c. Explain the process of gaseous exchange	
d. Analyse the pathologies of the respiratory system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 8

### Understand the anatomy, physiology and pathologies of the cardiovascular system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and function of the cardiovascular system	
b. Explain the composition and functions of the blood	
c. Explain the location, structure and function of the heart	
d. Explain the types of blood vessel	
e. Identify the major blood vessels of the body	
f. Define blood pressure	
g. Explain the factors that affect blood pressure	
h. Analyse the pathologies of the cardiovascular system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 9

### Understand the anatomy, physiology and pathologies of the lymphatic system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and function of the lymphatic system	
b. Describe the composition of lymph	
c. Explain the location and function of the major lymphatic nodes and ducts	
d. Explain the location and function of lymphatic organs	
e. Explain the principles of immunity	
f. Analyse the pathologies of the lymphatic system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 10

### Understand the anatomy, physiology and pathologies of the digestive system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and function of the digestive system	
b. Explain the processes of digestion	
c. Identify the location of the organs involved in digestion	
d. Analyse the pathologies of the digestive system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



## Learning outcome 11

### Understand the anatomy, physiology and pathologies of the urinary system

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and function of the urinary system	
b. Explain the production and content of urine	
c. Analyse the pathologies of the urinary system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.



Learning outcome 12

**Understand the anatomy, physiology and pathologies of the reproductive system**

You can:	Portfolio reference / Assessor initials*
a. Explain the structure and function of the reproductive system	
b. Explain the key stages of the human reproductive cycle	
c. Analyse the pathologies of the reproductive system	

\* Assessor initials to be inserted if orally questioned.

Requirements highlighted in white are assessed in the external paper.

A minimum of three pathologies for each body system must be evidenced in your portfolio.

# 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.

## Learning outcome 1: Understand the organisation of the body

**Organisation of the body:** Simple chemicals (e.g. oxygen, carbon dioxide), nutrient chemicals (e.g. carbohydrates, lipids, proteins, vitamins, minerals, fibre, water), complex chemicals (e.g. ATP, DNA), cells, tissues, organs, systems, organisms.

**Major tissue types and locations:** Epithelial tissue (protective, secretory), simple epithelial tissue (squamous, cuboidal, columnar, ciliated), stratified epithelial tissue (keratinised, non-keratinised, transitional), connective tissue (fibrous, areolar, adipose, lymphoid, cartilage, bone), blood (red blood cells, white blood cells, platelets, plasma), muscular tissue (skeletal, smooth, cardiac), nervous tissue (neurones, neurological cells), membranes (serous, mucous, synovial).

**Anatomical regions of the body:** Definitions and locations (abdominal, axillary, brachial, buccal, calcaneal, carpal, celiac, cephalic, cervical, costal, cranial, crural, cubital, cutaneous, femoral, forearm, frontal, gluteal, groin, inguinal, lumbar, mammary, ophthalmic, orbital, palmar, patellar, pectoral, pedal, pelvic, perineal, pericardial, plantar, popliteal, sacral, tarsal, thoracic, umbilica).

**Directional terms:** Definitions and examples (superior, inferior, medial, lateral, superficial, deep, anterior, posterior, proximal, distal, parietal, visceral).

**Planes:** Frontal, sagittal, transverse, longitudinal, oblique.

### **Structure and function of cells:**

Components (cell membrane, nucleus, nucleolus, cytoplasm, vacuoles, vesicles, centrioles, centrosome, organelles, golgi, lysosome, ribosome, mitochondria, endoplasmic reticulum), process of transport across cell membrane (diffusion, osmosis, facilitated diffusion, active transport, dissolution, filtration, phagocytosis, pinocytosis).

**Cell growth and repair:** Process of mitosis (prophase, metaphase, anaphase, telophase, interphase).

**Growth and repair:** Cells, tissues, bone formation, homeostasis, influencing factors, hormones, nutrition, environmental, pathologies.

**Pathologies:** Viral, bacterial, fungal, congenital, hormonal, allergic.



## Learning outcome 2: Understand the anatomy, physiology and pathologies of the skin, hair and nails

**Structure of the skin:** Epidermis layer (stratum corneum/horny, stratum lucidum/clear, stratum granulosum/granular, stratum spinosum/prickle, stratum germinativum/basal), dermis layer (papillary, reticular, subcutaneous, blood capillary, lymphatic capillary network, hair, sebaceous gland, sweat glands, sensory and motor nerve endings, collagen), subcutaneous layer (adipose), glands (sebaceous, sebum, eccrine, apocrine).

**Structure of the hair:** Components of hair (hair follicle, hair shaft, inner root sheath, outer root sheath, arrector pili muscle, keratin, cuticle, cortex, medulla, dermal papilla), hair types (lanugo, vellus, terminal).

**Structure of the nail:** Nail bed, hyponychium, eponychium, paronychium, mantle, lateral nail fold, nail grooves, matrix, lunula, cuticle, nail plate, free edge.

### Functions of the skin, hair and nails:

**Skin** – secretion, heat regulation, absorption, protection, excretion, sensation, vitamin production, melanin formation.

**Hair** – heat regulation, protection.

**Nails** – protection, manual dexterity.

### Growth and repair:

**Skin** – growth cycle (cell formation, keratinisation, desquamation, healing), definition and appearance of skin types (mature, young, dry, oily, combination, sensitive, balanced), factors affecting skin condition (age, diet, nutrition, smoking, alcohol, ultraviolet, stress, climate).

**Hair** – growth cycle (anagen, catagen, telogen), factors affecting hair growth

(congenital, hormonal, topical, systemic, non-systemic, medication).

**Nail** – growth cycle (nail formation in matrix, layers, keratin), factors affecting nail growth (e.g. health, age, diet, medication).

**Pathologies of the skin:** Causes, signs and symptoms, infestations (e.g. scabies, mites, pediculosis pubis, pediculosis corporis), bacterial infections (e.g. impetigo, conjunctivitis, acne vulgaris, acne rosacea, boils, folliculitis), viral infections (e.g. herpes simplex, herpes zoster, verrucae or warts), fungal diseases (e.g. tinea corporis, tinea capitis, tinea pedis), allergies (e.g. dermatitis, eczema, urticaria), pigmentation disorders (e.g. vitiligo, albinism, chloasma, ephelides, lentigo, naevae, leucoderma, erythema), general disorders (e.g. sensitive skin, ultraviolet damage, pustules, papules), skin cancers (melanoma, carcinoma).

**Pathologies of the hair:** Trichorrhexis nodosa, loose anagen syndrome, trichotillomania, alopecia, tinea capitis, seborrheic dermatitis, hypotrichosis, folliculitis on scalp.

**Pathologies of the nails:** Causes, signs and symptoms (e.g. leukonychia, hang nail, paronychia, onychorrhexis, onycholysis, transverse ridges, vertical ridges, tinea unguium, pitting).

**Less common pathologies:** Definitions, signs and symptoms of less common pathologies (bromidrosis/osmidrosis, anhidrosis, hyperhidrosis, scleroderma, systemic lupus erythematosus, malignant tumours, burns, pressure sores/bed sores).



### Learning outcome 3: Understand the anatomy, physiology and pathologies of the skeletal system

**Functions of the skeleton:** Shape and support, muscle attachment and leverage, joints for movement, production of red blood cells, storage of calcium, protection.

**Location, structure and function of bones:** Skeletal system (axial, appendicular), bones of the head (frontal, parietal, temporal, occipital, sphenoid, ethmoid, nasal, zygomatic, maxillae, mandible), bones of the neck (cervical vertebrae, atlas, axis), bones of the spine (thoracic vertebrae, lumbar vertebrae, sacral vertebrae, coccygeal vertebrae, intervertebral discs), bones of the torso (ribs, sternum, clavicle, scapula, pelvic girdle), bones of the pelvic girdle (ilium, ischium, pubis), bones of the upper limbs (humerus, radius, ulna), bones of the hands (carpals, metacarpals, phalanges), bones of the lower limbs (femur, patella, tibia, fibula), bones of the feet (tarsals, metatarsals, phalanges), arches of the foot (medial longitudinal, lateral longitudinal, anterior transverse, posterior transverse), types of bones (compact, cancellous, long, short, flat, irregular, sesamoid), components of long bone (diaphysis, epiphysis, cartilage, articular cartilage, medullary cavity, periosteum).

**Location, structure and function of joints:** Classifications (fibrous/immovable, cartilaginous/slightly movable, synovial/freely movable), synovial joint (joint capsule, ligaments, synovial fluid, articular cartilage, bone), types of synovial joint (gliding, ellipsoid, hinge, saddle, pivot, ball and socket), range of movement associated with joint types (flexion, extension, circumduction, rotation, adduction, abduction, pronation, supination, dorsiflexion, plantar flexion, eversion, inversion).

**Growth and repair:** Definition and function (osteoblasts, osteocytes, osteoclasts), process of ossification.

**Pathologies (common and less common):** Causes, signs and symptoms, fractures, breaks, osteoarthritis, rheumatoid arthritis, gout, osteoporosis, repetitive strain injuries (e.g. tendonitis, bursitis, carpal tunnel syndrome), spinal injuries (e.g. whiplash, slipped disc), postural defects (e.g. lordosis, kyphosis, scoliosis), foot problems (e.g. bunions, hammer toe, plantar fasciitis), artificial joints, systemic lupus erythematosus, synovitis, rickets, ankylosing spondylitis, spondylosis, Paget's disease, osteomalacia, osteogenesis imperfecta, cervical stenosis.



## Learning outcome 4: Understand the anatomy, physiology and pathologies of the muscular system

### Functions of the muscular system:

Movement of skeleton, maintenance of posture, generation of heat.

**Structure and function:** Muscle types (voluntary/skeletal, involuntary/smooth, cardiac), characteristics of muscle (contractibility, elasticity, excitability, extensibility), structure of skeletal muscle (origin, insertion, tendon, aponeurosis, epimysium, endomysium, perimysium, fascicles, muscle fibres, myofibrils, actin and myosin, sarcoplasmic reticulum), types of muscle contraction during movement (isotonic concentric, isotonic eccentric, isometric), muscle roles during movement (agonist, antagonist, synergist, fixator).

### Location and action of skeletal muscles:

Muscles of the scalp and face (frontalis, occipitalis, orbicularis oculi, corrugator supercilii), nasalis, orbicularis oris, zygomaticus, risorius, mentalis), facial muscles of mastication (buccinators, masseter, temporalis), neck muscles (platysma, sternocleidomastoid), muscles of anterior thorax (pectoralis major and minor, external and internal intercostals, diaphragm, serratus anterior), muscles of posterior thorax (erector spinae, trapezius, latissimus dorsi, levator scapulae, rhomboids major and minor, rotator cuff, supraspinatus, infraspinatus, teres minor, subscapularis, teres major), muscles of upper arm (deltoid, biceps brachii, coracobrachialis, brachialis, triceps brachii), muscles of lower arm and hand (pronator teres, brachioradialis, flexor carpi radialis, flexor carpi ulnaris, flexor carpi digitorum, longus, brevis, extensor, carpi ulnaris, extensor carpi digitorum, abductor pollicis brevis, flexor pollicis brevis, thenar and hypothenar eminence), muscles of the

abdominal region (external and internal obliques, rectus abdominis, transversus abdominis, quadratus lumborum), muscles of the hip (iliopsoas, piriformis, gluteus maximus, gluteus medius, gluteus minimus, tensor fasciae latae), muscles of the thigh (sartorius, rectus femoris, vastus lateralis, vastus intermedius, vastus medialis, biceps femoris, semitendinosus, semimembranosus, gracilis, adductors longus, brevis, magnus), muscles of the lower leg and foot (gastrocnemius, soleus, tibialis anterior, peroneus longus, extensor digitorum longus, flexor digitorum longus, extensor hallucis longus).

**Growth and repair:** Process of muscular hypertrophy (e.g. increased muscle fibre diameter, myofibril production, increased mitochondria).

**Pathologies (common and less common):** Causes, signs and symptoms, cramp and spasm, fatigue, inflammatory conditions, sprains, muscle strains, rheumatism, atrophy, tetanus, torticollis, fibrositis, fibromyalgia, muscular dystrophy, myasthenia gravis, spasticity, myositis, myopathy, shin splints.



## Learning outcome 5: Understand the anatomy, physiology and pathologies of the nervous system

### Function of the nervous system:

Detection of stimuli, process and interpretation of stimuli, response to stimuli.

### Location, structure and function:

Central nervous system (brain, spinal cord), peripheral nervous system (cranial nerves, spinal nerves, brachial plexus, lumbar plexus, sacral plexus), autonomic nervous system (sympathetic, parasympathetic), types of neurone (motor, efferent, afferent), structure of a motor neurone (axon, dendrites, cell body, myelin sheath, neurilemma, axon terminals, synapse, nodes of Ranvier, grey matter, white matter), brain (meninges, ventricles, cerebrospinal fluid, cerebrum, cerebellum, pons Varolii, medulla oblongata, hypothalamus, thalamus, brain stem), spinal cord (white matter, grey matter, dura, arachnoid, pia mater, cerebrospinal fluid), generation of nerve impulses, growth and repair of nerves.

### Pathologies (common and less

**common):** Causes, signs and symptoms, stress, sciatica, neuralgia, myalgic encephalomyelitis/chronic fatigue syndrome, referred pain, epilepsy, cerebral palsy, Alzheimer's disease and dementia, strokes including transient ischaemic attacks, Bell's palsy, Parkinson's disease, motor neurone disease, multiple sclerosis, myasthenia gravis, meningitis, paralysis, poliomyelitis, deafness, earache, glue ear, tinnitus, vertigo, cataract, conjunctivitis, glaucoma, peripheral neuropathy, spina bifida.



## Learning outcome 6: Understand the anatomy, physiology and pathologies of the endocrine system

### Functions of the endocrine system:

Hormone secretion into the blood stream, maintenance of homeostasis, control of body's functions (stimulation/inhibition of growth, induction/suppression of cell death, inhibition of immune system, regulation of metabolism, preparation for new activity, preparation for new phase in life, controlling reproductive cycle).

### Location, structure and function:

Endocrine glands (hypothalamus, pituitary, pineal, thyroid, parathyroid, thymus, pancreas, adrenal, ovaries, testes), associated hormones and hormone actions (thyroid stimulating hormone, adrenocorticotrophic hormone, human growth hormone, follicle stimulating hormone, luteinising hormone, lactogenic hormone, antidiuretic hormone, oxytocin, melatonin, thyroxine T3, calcitonin, parathormone, insulin, glucagon, aldosterone, cortisone, testosterone, oestrogen, progesterone, adrenalin, noradrenaline), relationship of endocrine system with other body systems (nervous, circulatory, digestive, reproductive, integumentary), growth and repair.

### Pathologies (common and less common):

Causes, signs and symptoms, thyrotoxicosis, myxoedema, goitre, Addison's syndrome, Cushing's syndrome, diabetes mellitus, diabetes insipidus.



## Learning outcome 7: Understand the anatomy, physiology and pathologies of the respiratory system

### **Functions of the respiratory system:**

Oxygen supply to body tissues, carbon dioxide removal from body tissues.

### **Location, structure and function:**

Respiratory system (mouth, nose, nasal cavity, larynx, pharynx, epiglottis, trachea, primary bronchi, bronchioles, alveoli, lungs, pulmonary capillary network, pleural membranes, diaphragm, intercostal muscles), mechanism of inhalation and exhalation, gaseous exchange, composition of inspired and expired air, process of internal and external respiration, control of respiration (chemical, nervous), process of pulmonary circulation, relationship of respiratory system with other body systems (circulatory, nervous, muscular), growth and repair.

### **Pathologies (common and less common):**

Causes, signs and symptoms, emphysema, bronchitis, asthma, pneumonia, tuberculosis, hay fever, rhinitis, whooping cough, sinusitis, laryngitis, pharyngitis, fibrosis, sarcoidosis, pleurisy, chronic obstructive airways disease, chronic obstructive pulmonary disorder, cystic fibrosis, lung cancer, bronchiolitis, pertussis, pneumothorax.



## Learning outcome 8: Understand the anatomy, physiology and pathologies of the cardiovascular system

### Functions of the cardiovascular system:

Transportation (nutrients, gases, hormones, antibodies, waste products), heat regulation, protection and immunity, blood flow distribution, clotting.

**Location of blood vessels:** Arteries of the head and neck (innominate, common carotid, internal carotid, external carotid, facial, occipital, superficial, temporal), veins of the head and neck (posterior external jugular, occipital, superficial, temporal, maxillary, anterior facial, common facial, internal jugular, external jugular), arteries of the body (coronary artery, ascending and descending aorta, left and right common carotid, left and right subclavian, intercostal, pulmonary, right hepatic, splenic, renal, superior mesenteric, right iliac, inferior mesenteric, left iliac, vertebral, axillary, brachial, left and right ulnar, left and right radial, left and right deep palmar arch, left and right superficial palmar arch, external iliac, left and right femoral, left and right popliteal, left and right anterior tibial, left and right posterior tibial, plantar arch, digital arteries), veins of the body (inferior vena cava, pulmonary, right hepatic, hepatic portal, splenic, right renal, left and right iliac, left and right axillary, left and right brachial, left and right basilica, left and right cephalic, left and right subclavian, long saphenous, left and right short saphenous, dorsal venous arch, left and right femoral, left and right popliteal, left and right posterior tibial, left and right anterior tibial).

### Location, structure and function:

Blood (plasma, erythrocytes, leucocytes, thrombocytes), blood vessels (arteries, arterioles, veins, venules, capillaries), heart (superior vena cava, inferior vena

cava, right atrium, tricuspid valve, right ventricle, pulmonary valve, pulmonary artery, septum, pulmonary veins, left atrium, bicuspid valve, left ventricle, aorta, aortic arch, endocardium, myocardium, pericardium), cardiac cycle (diastole, atrial systole, ventricular systole), electrical conduction in the heart (sino-atrial node, atrioventricular node), type of circulation (pulmonary, systemic, portal, coronary), definition of heart rate, heart rate values (males, females), heart rate control (nervous system, hormonal), definition of blood pressure (systolic, diastolic), blood pressure measurements and classifications, blood pressure regulation, factors affecting blood pressure (e.g. force of the heart beat, volume of blood, blood flow resistance in the arteries, viscosity of the blood, elasticity of vessel walls), causes of blood pressure change (e.g. diet, exercise, stress, medication).

**Growth and repair:** Process of blood clotting (thrombocytes, thromboplastin, prothrombin, calcium, thrombin, fibrinogen, fibrin).

**Pathologies (common and less common):** Causes, signs and symptoms, anaemia, aneurysm, arteriosclerosis, atherosclerosis, coronary thrombosis, deep vein thrombosis, hypertension, hypotension, varicose veins, palpitations, high cholesterol, myocardial infarction, atherosclerosis, arteriosclerosis, heart disease, palpitations, tachycardia, bradycardia, cardiac arrhythmia, intermittent claudication, pulmonary embolism.



## Learning outcome 9: Understand the anatomy, physiology and pathologies of the lymphatic system

### Functions of the lymphatic system:

Transportation (excess fluid, foreign particles, fats), purification (waste and toxins), protection (antibodies for defence).

### Location, structure and function:

Lymph (leucocytes, lymphocytes, waste products), lymphatic capillaries, lymphatic vessels, lymphatic nodes (superficial and deep cervical, submandibular, axillary, supraclavicular, iliac, inguinal, popliteal), lymphatic ducts (general, thoracic duct, right lymphatic duct, cisterna chyli), lymphoid tissue (spleen, thymus, tonsils,

appendix, Peyer's patches), immunity (antigens, antibodies, acquired immunity, natural immunity, allergy triggers and the body's response), relationship with other body systems (muscular, digestive, immune), growth and repair.

### Pathologies (common and less common):

Causes, signs and symptoms, cancer, fever, cellulitis, rheumatoid arthritis, oedema, Hodgkin's disease, lymphoedema, myalgic encephalomyelitis, non-Hodgkin's lymphoma, leukaemia.

## Learning outcome 10: Understand the anatomy, physiology and pathologies of the digestive system

### Functions of the digestive system:

Ingestion, mechanical and chemical breakdown of food, digestion, absorption of nutrients, defaecation.

### Location, structure and function:

Mouth, buccal cavity, lips, teeth, tongue, pharynx, epiglottis, oesophagus, salivary glands, stomach, cardiac sphincter, pyloric sphincter, oblique muscle layer, small intestine (duodenum, jejunum, ileum, villi), large intestine (ileocaecal valve, caecum, ascending colon, transverse colon, descending colon, rectum, anus, anal sphincter), accessory digestive organs (gastric glands, pancreas, intestinal glands, liver, gall bladder), process of physical digestion (mastication, peristalsis, churning), process of chemical digestion (proteases, lipases, amylases), process of absorption of nutrients (proteins, peptones, polypeptides, amino acids, carbohydrates,

monosaccharides, disaccharides, polysaccharides, fats, fatty acids, glycerol), relationship with other body systems (circulatory, endocrine, lymphatic, muscular, nervous), growth and repair.

### Pathologies (common and less common):

Causes, signs and symptoms, heartburn, indigestion, irritable bowel syndrome, constipation, diarrhoea, gall stones, coeliac's disease, ulcer, inflamed gall bladder, pernicious anaemia, colitis, ulcerative colitis, Crohn's disease, diverticulosis, diverticulitis, colon cancer, enteritis, gastritis.



## Learning outcome 11: Understand the anatomy, physiology and pathologies of the urinary system

### Functions of the urinary system:

Distribution of intracellular and extracellular fluid, balance fluid intake with fluid output, general electrolyte composition and balance, maintain pH values of the body's fluid systems, regulation of blood pressure.

### Location, structure and function:

Kidneys (capsule, cortex, medulla, pyramids, calyces), nephron (afferent and efferent arterioles, glomerulus, Bowman's, glomerular capsule, proximal coiled tubule, loop of Henle, distal coiled tubule, collecting duct), ureters, bladder, urethra, urine production (filtration, reabsorption,

active secretion), factors affecting urine production (cold and hot weather, activity and inactivity, stress, water consumption), urine composition (urea, uric acid/ ammonia, salts, water), relationship with other body systems (circulatory, endocrine, skeletal, integumentary), growth and repair.

### Pathologies (common and less

**common):** Causes, signs and symptoms, cystitis, incontinence, renal failure, kidney stones, bladder stones, nephritis, renal failure, renal colic, uraemia, dysuria, enuresis, incontinence, nephroblastoma.

## Learning outcome 12: Understand the anatomy, physiology and pathologies of the reproductive system

### Functions of the reproductive system:

Production of sperm and ova, meiosis, mitosis, cytokinesis.

### Location, structure and function:

The female reproductive tract (ovum, ovary, fallopian tubes, uterus, cervix, vulva, vagina, labia, clitoris, vestibule and greater vestibular glands, mammary glands), function of female sex hormones (e.g. oestrogen, progesterone), male reproductive tract (testes, scrotum, vas deferens, epididymis, seminal vesicles, prostate, urethra, penis), function of male sex hormones (e.g. testosterone).

**Growth and repair:** Define female reproductive stages (puberty, pregnancy, menopause), effects of female puberty, menstrual cycle (menstruation, follicular phase, ovulation, luteal phase), stages of pregnancy (fertilisation, post-fertilisation,

cell division, embryo formation, foetal development, parturition, lactation), effects of female menopause (e.g. cessation of menses, mood swings, hot flushes, bone loss, atrophy of reproductive organs), male reproductive stages (puberty, menopause), effects of male puberty, effects of male menopause (e.g. fatigue, weakness, depression, sexual dysfunction).

### Pathologies (common and less

**common):** Causes, signs and symptoms, infertility, mastitis, amenorrhoea, dysmenorrhoea, pre-menstrual syndrome, sexually transmitted diseases, polycystic ovarian syndrome, endometriosis, pelvic inflammatory disease, testicular cancer, prostate cancer, breast cancer, cervical cancer, pelvic inflammatory disease, impotence, ovarian cysts.