



Accredited Africa Training Institute for Capacity Development

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COURSE BROCHURE

Anatomy, Physiology, Pathophysiology and Treatment Options

Health Sciences and Social Services / Curative Health

Unit Standard 259363 · NQF Level 5 · 45 Credits · 42 Days

COURSE OVERVIEW

This course equips learners with a comprehensive understanding of human anatomy, physiology, and pathophysiology, enabling them to describe the structure and function of the human body and the mechanisms of disease. It also covers treatment options for specific conditions, preparing learners to apply this knowledge in a healthcare or training context.

Category	Health Sciences and Social Services
Subfield	Curative Health
Unit Standard	259363
Accreditation	SAQA Accredited · NQF Level 5 · 45 Credits
Duration	42 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Describe the anatomical structures and physiological functions of major body systems.
- Explain the pathophysiology of common diseases and disorders affecting these systems.
- Analyze the relationship between anatomy, physiology, and disease processes.
- Evaluate treatment options for specific conditions based on pathophysiological principles.
- Apply knowledge of anatomy, physiology, and pathophysiology to case studies and clinical scenarios.
- Demonstrate understanding of how treatment options are selected and monitored.

WHO SHOULD ATTEND

- Healthcare workers, trainers, and individuals seeking foundational knowledge in anatomy, physiology, and pathophysiology for career advancement or personal development.

COURSE OUTLINE

Day 1: Introduction to Human Anatomy and Physiology

- Overview of anatomy and physiology
- Levels of structural organisation: chemical, cellular, tissue, organ, system, organism
- Body cavities: cranial, thoracic, abdominal, pelvic
- Anatomical position, directional terms, and planes
- Homeostasis and feedback mechanisms
- Introduction to organ systems

Day 2: The Cell and Tissues

- Cell structure: plasma membrane, nucleus, cytoplasm, organelles
- Cell transport mechanisms: diffusion, osmosis, active transport
- Cell cycle: interphase, mitosis, cytokinesis
- Epithelial tissue: classification and functions
- Connective tissue: types (bone, cartilage, blood, adipose)
- Muscle tissue: skeletal, cardiac, smooth
- Nervous tissue: neurons and neuroglia
- Tissue injury and repair

Day 3: The Integumentary System

- Epidermis, dermis, hypodermis
- Keratinocytes, melanocytes, Langerhans cells
- Sweat glands, sebaceous glands, hair follicles
- Functions: protection, sensation, temperature regulation, vitamin D synthesis
- Pathophysiology: acne, eczema, psoriasis, skin cancer
- Burns: classification and treatment

Day 4: The Skeletal System

- Axial skeleton: skull, vertebral column, rib cage
- Appendicular skeleton: pectoral and pelvic girdles, upper and lower limbs
- Bone histology: compact vs spongy bone
- Ossification: intramembranous and endochondral
- Joints: fibrous, cartilaginous, synovial
- Fracture types and healing
- Osteoporosis, osteoarthritis, rheumatoid arthritis

Day 5: The Muscular System

- Muscle anatomy: epimysium, perimysium, endomysium, fascicles
- Sarcomere structure: actin, myosin, Z-discs
- Neuromuscular junction and excitation-contraction coupling
- Sliding filament theory
- Major muscles: head, neck, trunk, upper limb, lower limb
- Muscle fibre types: slow-twitch, fast-twitch
- Pathophysiology: muscle strain, atrophy, muscular dystrophy, myasthenia gravis

Day 6: The Nervous System

- Neuron structure: dendrites, cell body, axon

- Neuroglia: astrocytes, oligodendrocytes, microglia, Schwann cells
- Resting membrane potential, depolarisation, repolarisation
- Synaptic transmission: neurotransmitters
- Central nervous system: brain (cerebrum, cerebellum, brainstem) and spinal cord
- Peripheral nervous system: cranial nerves, spinal nerves, autonomic division
- Pathophysiology: stroke, multiple sclerosis, Parkinson's disease, epilepsy

Day 7: The Endocrine System

- Endocrine glands: pituitary, thyroid, parathyroid, adrenal, pancreas, gonads
- Hormone classification: water-soluble vs lipid-soluble
- Mechanism of action: second messengers, intracellular receptors
- Hypothalamus-pituitary axis
- Thyroid hormones: T3, T4, calcitonin
- Pancreatic hormones: insulin, glucagon
- Pathophysiology: diabetes mellitus type 1 and 2, hyperthyroidism, hypothyroidism, Cushing's syndrome

Day 8: The Cardiovascular System

- Heart chambers, valves, coronary circulation
- Cardiac muscle and conduction system: SA node, AV node, Purkinje fibres
- Cardiac cycle: systole, diastole, heart sounds
- Blood vessels: tunica intima, media, adventitia
- Haemodynamics: blood pressure, resistance, flow
- Blood composition: plasma, erythrocytes, leukocytes, platelets
- Pathophysiology: hypertension, atherosclerosis, myocardial infarction, heart failure, anaemia

Day 9: The Lymphatic and Immune Systems

- Lymphatic vessels, lymph nodes, spleen, thymus, tonsils
- Lymph formation and circulation
- Innate immunity: barriers, phagocytes, inflammation, complement
- Adaptive immunity: antigens, antibodies, B cells, T cells
- Humoral vs cell-mediated immunity
- Active vs passive immunity
- Pathophysiology: hypersensitivity, autoimmune diseases (RA, lupus), HIV/AIDS

Day 10: The Respiratory System

- Nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, alveoli
- Conducting zone vs respiratory zone
- Ventilation: inspiration, expiration, lung volumes and capacities
- Gas exchange: diffusion across alveolar-capillary membrane
- Oxygen transport: haemoglobin, oxyhaemoglobin dissociation curve
- Carbon dioxide transport: bicarbonate, carbamino compounds
- Regulation: central and peripheral chemoreceptors
- Pathophysiology: asthma, COPD, pneumonia, tuberculosis, lung cancer

Day 11: The Digestive System

- Oral cavity, oesophagus, stomach, small intestine, large intestine
- Accessory organs: salivary glands, liver, gallbladder, pancreas
- Digestion: mechanical and chemical breakdown

- Absorption: villi, microvilli, transport mechanisms
- Liver functions: metabolism, detoxification, bile production
- Pancreatic enzymes and bicarbonate
- Hormonal regulation: gastrin, secretin, CCK
- Pathophysiology: GERD, peptic ulcer, gallstones, hepatitis, cirrhosis, pancreatitis

Day 12: The Urinary System

- Kidney structure: cortex, medulla, nephron (glomerulus, tubules)
- Juxtaglomerular apparatus
- Glomerular filtration rate and its regulation
- Tubular reabsorption: glucose, water, ions
- Tubular secretion: hydrogen ions, drugs
- Countercurrent multiplication and urine concentration
- Renin-angiotensin-aldosterone system
- Pathophysiology: urinary tract infection, kidney stones, acute kidney injury, chronic kidney disease

Day 13: The Reproductive System

- Male: testes, epididymis, vas deferens, seminal vesicles, prostate, penis
- Spermatogenesis and hormonal control (testosterone, FSH, LH)
- Female: ovaries, fallopian tubes, uterus, vagina, vulva
- Oogenesis and ovarian cycle
- Menstrual cycle: follicular, ovulatory, luteal phases
- Hormonal regulation: oestrogen, progesterone, FSH, LH
- Fertilisation, implantation, pregnancy, parturition
- Pathophysiology: sexually transmitted infections, endometriosis, PCOS, prostate cancer

Day 14: Introduction to Pathophysiology

- Pathophysiology: definition and scope
- Cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia
- Cell injury: causes (hypoxia, toxins, infections) and mechanisms
- Cell death: necrosis vs apoptosis
- Inflammation: acute and chronic, mediators, outcomes
- Tissue repair: regeneration, fibrosis, wound healing
- Neoplasia: benign vs malignant, carcinogenesis, tumour markers
- Introduction to genetic and environmental factors in disease

Day 15: Cardiovascular and Respiratory Pathophysiology

- Atherosclerosis: plaque formation, risk factors, complications
- Hypertension: primary and secondary, target organ damage
- Myocardial infarction: coronary occlusion, ischaemia, necrosis
- Heart failure: systolic vs diastolic, compensatory mechanisms
- Asthma: bronchoconstriction, inflammation, airway remodelling
- COPD: emphysema, chronic bronchitis, pathophysiology
- Pneumonia: lobar vs bronchopneumonia, causative organisms
- Tuberculosis: primary and secondary infection, granuloma formation
- Treatment options: pharmacotherapy (statins, beta-blockers, bronchodilators, antibiotics) and lifestyle

Day 16: Endocrine and Renal Pathophysiology

- Diabetes mellitus type 1: autoimmune destruction of beta cells, insulin deficiency
- Diabetes mellitus type 2: insulin resistance, relative insulin deficiency
- Acute complications: DKA, hyperosmolar hyperglycaemic state
- Chronic complications: microvascular (retinopathy, nephropathy, neuropathy) and macrovascular
- Thyroid disorders: Graves' disease, Hashimoto's thyroiditis, goitre
- Acute kidney injury: prerenal, intrarenal, postrenal
- Chronic kidney disease: stages, uraemia, electrolyte imbalances
- Treatment options: insulin, oral hypoglycaemics, thyroid hormone replacement, dialysis, transplantation

Day 17: Neurological and Musculoskeletal Pathophysiology

- Stroke: ischaemic vs haemorrhagic, penumbra, oedema
- Traumatic brain injury: concussion, contusion, haematoma
- Parkinson's disease: dopamine deficiency, Lewy bodies
- Multiple sclerosis: demyelination, autoimmune attack
- Alzheimer's disease: amyloid plaques, neurofibrillary tangles
- Osteoarthritis: cartilage degradation, bone remodelling
- Rheumatoid arthritis: synovitis, pannus formation, joint destruction
- Osteoporosis: bone resorption > formation, risk factors
- Treatment options: thrombolytics, anticoagulants, levodopa, immunosuppressants, NSAIDs, DMARDs, bisphosphonates

Day 18: Infectious Diseases and Immunology Pathophysiology

- HIV: retrovirus, CD4+ T cell depletion, AIDS definition
- Opportunistic infections: Pneumocystis, candidiasis, TB, CMV
- Hepatitis B and C: viral replication, liver inflammation, cirrhosis, hepatocellular carcinoma
- Tuberculosis: mycobacterium, granuloma, latent vs active
- Malaria: Plasmodium species, life cycle, anaemia, cerebral malaria
- Antimicrobial resistance: mechanisms (beta-lactamases, efflux pumps), MRSA, MDR-TB
- Treatment options: antiretroviral therapy, antivirals (interferon, direct-acting antivirals), antibiotics, antimalarials
- Vaccination principles and types

Day 19: Cancer Pathophysiology and Treatment

- Carcinogenesis: initiation, promotion, progression
- Oncogenes: Ras, Myc; tumour suppressor genes: p53, Rb
- Hallmarks of cancer: sustained proliferation, evasion of apoptosis, angiogenesis, metastasis
- Cancer staging: TNM system; grading: differentiation
- Treatment modalities: surgery, radiation (external beam, brachytherapy), chemotherapy (alkylating agents, antimetabolites), targeted therapy (tyrosine kinase inhibitors, monoclonal antibodies), immunotherapy (checkpoint inhibitors)
- Common cancers: lung, breast, colorectal, prostate, cervical
- Risk factors: smoking, diet, genetics, infections (HPV, HBV)
- Palliative care and survivorship

Day 20: Integrated Case Studies and Treatment Planning

- Case study 1: Cardiovascular disease (hypertension + heart failure)
- Case study 2: Diabetes mellitus with complications
- Case study 3: Respiratory disease (COPD exacerbation)
- Case study 4: Cancer (breast cancer treatment planning)
- Multidisciplinary approach: role of doctors, nurses, pharmacists, allied health
- Treatment plan components: medication, lifestyle, surgery, rehabilitation

- Monitoring and adjusting treatment: adverse effects, compliance
- Ethical issues: informed consent, end-of-life care, resource allocation

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **45 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 90,800.00	R 90,800.00
1	In-House	R 118,000.00	R 118,000.00
1	On-Campus (Pretoria)	R 136,300.00	R 136,300.00

UPCOMING SESSIONS

Start	End	Method	Venue
21 Aug 2026	19 Oct 2026	On-Campus	Harare, Zimbabwe
21 Aug 2026	19 Oct 2026	On-Campus	Dubai, UAE
24 Aug 2026	20 Oct 2026	On-Campus	Victoria Falls, Zimbabwe
24 Aug 2026	20 Oct 2026	On-Campus	Abu Dhabi, UAE
25 Aug 2026	21 Oct 2026	On-Campus	Durban, South Africa
26 Aug 2026	22 Oct 2026	On-Campus	Shenzhen, China
27 Aug 2026	23 Oct 2026	On-Campus	Harare, Zimbabwe
28 Aug 2026	26 Oct 2026	On-Campus	Bangkok, Thailand

Contact us if no suitable date is listed – on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 259363) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call +27 12 004 8389 or WhatsApp +27 65 077 6310 and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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