



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

Tel: +27 12 004 8389 · Mobile: +27 65 077 6310

Email: apply@aaticd.co.za · Website: www.aaticd.co.za

COURSE BROCHURE

Demonstrate Knowledge Of The Macro Structure Basic Functions And Applied Basic Biophysics Of All Human Body Systems Training

Health Sciences and Social Services / Promotive Health and Developmental Services

Unit Standard 120181 · NQF Level 3 · 8 Credits · 5 Days

COURSE OVERVIEW

This course provides learners with foundational knowledge of the macro structure, basic functions, and applied basic biophysics of all human body systems. It equips learners to understand how body systems interact and respond to biophysical principles, supporting roles in health, fitness, or medical support fields.

Category	Health Sciences and Social Services
Subfield	Promotive Health and Developmental Services
Unit Standard	120181
Accreditation	SAQA Accredited · NQF Level 3 · 8 Credits
Duration	5 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Identify and describe the macro structure of all major human body systems.
- Explain the basic functions of each body system and their interrelationships.
- Apply basic biophysical principles to understand physiological processes.
- Demonstrate knowledge of homeostasis and feedback mechanisms in body systems.
- Analyze the impact of common diseases on body system functions.
- Evaluate the role of biophysics in diagnostic and therapeutic applications.

COURSE OUTLINE

Day 1: Introduction to Human Body Systems and Basic Biophysics

- Overview of the human body: anatomical position, directional terms, and body cavities.
- Levels of organisation: chemical, cellular, tissue, organ, system, organism.
- Basic biophysics: diffusion, osmosis, active transport, and membrane potentials.
- Introduction to the major body systems: integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive.
- Homeostasis and feedback mechanisms.
- Practical activity: Microscopic observation of epithelial and connective tissues.

Day 2: Support and Movement Systems – Skeletal, Muscular, and Integumentary

- Skeletal system: bone structure, classification, and functions (support, protection, mineral storage, blood cell production).
- Joints: types and movements.
- Muscular system: muscle types (skeletal, cardiac, smooth), contraction mechanism (sliding filament theory), and energy biophysics.
- Integumentary system: layers (epidermis, dermis, hypodermis), functions (protection, thermoregulation, sensation).
- Biophysics of lever systems in the body.
- Case study: Osteoporosis and muscular dystrophy.

Day 3: Control and Communication Systems – Nervous and Endocrine Systems

- Nervous system: central and peripheral divisions, neurons, and neuroglia.
- Action potentials and synaptic transmission (biophysics of ion channels and neurotransmitters).
- Brain and spinal cord structure and function.
- Endocrine system: major glands (pituitary, thyroid, adrenal, pancreas) and hormones.
- Feedback loops (negative and positive) and hormone-receptor interactions.
- Practical: Reflex arc demonstration and blood glucose measurement simulation.

Day 4: Transport and Exchange Systems – Cardiovascular, Lymphatic, Respiratory, and Urinary

- Cardiovascular system: heart anatomy, blood vessels, cardiac cycle, and blood pressure regulation.
- Biophysics of blood flow (Poiseuille's law, Bernoulli's principle).
- Lymphatic system: structure, lymph formation, and immunity.
- Respiratory system: airways, lungs, mechanics of breathing, gas exchange (Fick's law).
- Urinary system: kidney structure, nephron function, filtration, reabsorption, and secretion.
- Acid-base balance and fluid homeostasis.
- Case study: Hypertension and renal failure.

Day 5: Digestion, Metabolism, Reproduction, and Integrated System Review

- Digestive system: organs, digestion, absorption, and biophysics of enzyme kinetics and transport.
- Metabolism: anabolism, catabolism, and energy balance (calorimetry).
- Reproductive system: male and female anatomy, gametogenesis, and hormonal control.
- Integration of systems: how systems work together during exercise and stress.
- Review of biophysics across systems (e.g., fluid dynamics, electrical activity, diffusion).
- Practical assessment: Case study analysis and oral presentation on a system disorder.
- Final Q&A; and evaluation.

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 **8 NQF credits** at **NQF Level 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 23,000.00	R 23,000.00
1	In-House	R 29,900.00	R 29,900.00
1	On-Campus (Pretoria)	R 34,500.00	R 34,500.00

UPCOMING SESSIONS

Start	End	Method	Venue
10 Aug 2026	14 Aug 2026	On-Campus	Durban, South Africa
10 Aug 2026	14 Aug 2026	On-Campus	Abu Dhabi, UAE
10 Aug 2026	14 Aug 2026	On-Campus	Pretoria, South Africa
10 Aug 2026	14 Aug 2026	On-Campus	Dubai, UAE
10 Aug 2026	14 Aug 2026	On-Campus	Cape Town, South Africa
10 Aug 2026	14 Aug 2026	On-Campus	Mauritius
17 Aug 2026	21 Aug 2026	On-Campus	Dubai, UAE
17 Aug 2026	21 Aug 2026	On-Campus	Pretoria, South Africa

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 120181) 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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