



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

Micro Organism Structure and Biology for Clinical Practice

Health Sciences and Social Services / Preventive Health

Unit Standard 252110 · NQF Level 5 · 12 Credits · 9 Days

COURSE OVERVIEW

This course equips healthcare professionals and laboratory personnel with foundational knowledge of microorganism structure and biology, enabling them to apply this understanding in clinical practice. Participants will learn to identify key microbial groups, understand their pathogenic mechanisms, and apply infection control principles to improve patient outcomes.

Category	Health Sciences and Social Services
Subfield	Preventive Health
Unit Standard	252110
Accreditation	SAQA Accredited · NQF Level 5 · 12 Credits
Duration	9 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Distinguish between the major groups of microorganisms (bacteria, viruses, fungi, and parasites) based on their structural and biological characteristics.
- Explain the mechanisms by which microorganisms cause disease in humans, including virulence factors and host-pathogen interactions.
- Apply principles of microbial growth, reproduction, and genetics to clinical scenarios such as antimicrobial resistance.
- Demonstrate appropriate specimen collection, handling, and processing techniques for microbiological analysis.
- Evaluate infection prevention and control strategies using knowledge of microorganism transmission and survival.
- Interpret basic microbiological laboratory results to support clinical diagnosis and treatment decisions.

WHO SHOULD ATTEND

- This course is designed for clinical laboratory technicians, nurses, medical students, and other healthcare practitioners who require a working knowledge of microbiology in their daily practice.

COURSE OUTLINE

Day 1: Introduction to Microbiology and Microbial Classification

- Introduction to microbiology: history and scope
- Overview of microorganisms: bacteria, viruses, fungi, parasites
- Prokaryotic vs. eukaryotic cell structure
- Classification systems: Bergey's Manual, Whittaker's five kingdoms
- Nomenclature and taxonomy basics

Day 2: Bacterial Cell Structure and Function

- Bacterial cell wall: peptidoglycan, Gram staining mechanism
- Cell membrane: structure, transport, and energy generation
- Cytoplasmic components: ribosomes, nucleoid, plasmids, inclusions
- Surface structures: capsule, flagella, pili, fimbriae
- Endospores: structure, formation, and resistance

Day 3: Bacterial Growth, Metabolism, and Genetics

- Bacterial growth curve: lag, log, stationary, death phases
- Factors influencing growth: temperature, pH, oxygen, nutrients
- Overview of bacterial metabolism: catabolism, anabolism
- Bacterial genetics: chromosome, plasmids, transposons
- Horizontal gene transfer: transformation, transduction, conjugation

Day 4: Viruses: Structure, Replication, and Pathogenesis

- Virus structure: capsid, envelope, nucleic acid types
- Classification: Baltimore system, ICTV taxonomy
- Replication cycles: lytic, lysogenic, and persistent infections
- Viral pathogenesis: entry, tropism, immune evasion
- Examples: HIV, influenza, hepatitis viruses, herpesviruses

Day 5: Fungi and Parasites: Structure and Biology

- Fungal cell structure: cell wall, hyphae, spores
- Fungal reproduction: asexual and sexual
- Medically important fungi: Candida, Aspergillus, dermatophytes
- Parasite classification: protozoa, helminths, arthropods
- Life cycles: Plasmodium, Entamoeba, Schistosoma, hookworms

Day 6: Host-Microbe Interactions and Immunology Basics

- Host-microbe relationships: symbiosis, pathogenicity, virulence
- Normal microbiota: skin, gut, respiratory, urogenital
- Innate immunity: barriers, phagocytes, complement, inflammation
- Adaptive immunity: antigens, antibodies, T cells, B cells
- Immune evasion strategies by pathogens

Day 7: Microbial Pathogenesis and Mechanisms of Disease

- Pathogenicity vs. virulence: definitions and concepts
- Adhesion and colonization: fimbriae, biofilms
- Toxins: exotoxins, endotoxins, mode of action
- Enzymes and invasins: hyaluronidase, coagulase, collagenase

- Stages of infection: incubation, prodromal, acute, convalescence

Day 8: Antimicrobial Agents and Resistance

- Antibiotic classes: cell wall, protein synthesis, nucleic acid, metabolic inhibitors
- Mechanisms of resistance: efflux pumps, enzyme inactivation, target modification
- Susceptibility testing: disk diffusion, MIC, Etest
- Multidrug-resistant organisms: MRSA, VRE, ESBL, CRE
- Antimicrobial stewardship: principles and implementation

Day 9: Clinical Applications and Laboratory Integration

- Specimen collection and transport: blood, urine, sputum, swabs
- Overview of diagnostic methods: microscopy, culture, serology, molecular
- Case studies: respiratory, urinary, wound, bloodstream infections
- Infection control: hand hygiene, isolation precautions, sterilization
- Role of microbiology in antibiotic stewardship and patient management

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 **12 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 35,000.00	R 35,000.00
1	In-House	R 45,500.00	R 45,500.00
1	On-Campus (Pretoria)	R 52,500.00	R 52,500.00

UPCOMING SESSIONS

Start	End	Method	Venue
10 Aug 2026	20 Aug 2026	On-Campus	Dubai, UAE
11 Aug 2026	21 Aug 2026	On-Campus	Pretoria, South Africa
12 Aug 2026	24 Aug 2026	On-Campus	Abu Dhabi, UAE
13 Aug 2026	25 Aug 2026	On-Campus	Durban, South Africa
13 Aug 2026	25 Aug 2026	On-Campus	Mauritius
14 Aug 2026	26 Aug 2026	On-Campus	Cape Town, South Africa
17 Aug 2026	27 Aug 2026	On-Campus	Pretoria, South Africa
18 Aug 2026	28 Aug 2026	On-Campus	Abu Dhabi, UAE

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 252110) 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.

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 · WhatsApp: +27 65 077 6310 · apply@aaticd.co.za · www.aaticd.co.za