Accredited Africa Training Institute for Capacity Development
Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa
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COURSE BROCHURE

Test Radiation Or Contaminant Measurement Instruments Training

Physical, Mathematical, Computer and Life Sciences / Physical Sciences

Unit Standard 119494 · NQF Level 3 · 12 Credits · 9 Days

COURSE OVERVIEW

This course equips learners with the knowledge and practical skills to safely and accurately test radiation or contaminant measurement instruments used in various occupational environments. Participants will learn to verify instrument functionality, interpret readings, and apply quality assurance procedures to ensure compliance with relevant health and safety regulations. The training is designed to minimize risks associated with radiation or contaminant exposure and enhance workplace safety.

Category	Physical, Mathematical, Computer and Life Sciences
Subfield	Physical Sciences
Unit Standard	119494
Accreditation	SAQA Accredited · NQF Level 3 · 12 Credits
Duration	9 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Demonstrate the ability to select appropriate radiation or contaminant measurement instruments for specific testing scenarios.
- Apply correct procedures to calibrate and verify the functionality of measurement instruments before use.
- Analyze instrument readings to determine the presence and level of radiation or contaminants in the environment.
- Evaluate instrument performance against manufacturer specifications and relevant standards.
- Implement quality control measures and record-keeping practices to ensure traceability and compliance.
- Identify and respond to abnormal readings or instrument malfunctions according to established protocols.

WHO SHOULD ATTEND

- This course is intended for health and safety practitioners, radiation protection officers, laboratory technicians, and anyone responsible for monitoring radiation or contaminant levels in mining, medical, industrial, or research settings.

COURSE OUTLINE

Day 1: Introduction to Radiation and Contaminant Measurement

- Overview of radiation types and sources
- Contaminants: radioactive, chemical, biological
- Units of measurement (Sievert, Becquerel, Gray
- Biological effects of radiation exposure
- Legal framework: National Nuclear Regulator Act, Occupational Health and Safety Act
- Introduction to measurement instruments: survey meters, dosimeters, contamination monitors

Day 2: Principles of Radiation Detection Instruments

- Gas-filled detectors: ionisation chambers, proportional counters, Geiger-Müller tubes
- Scintillation detectors: organic and inorganic scintillators
- Semiconductor detectors: silicon, germanium
- Detector efficiency and energy resolution
- Signal processing: preamplifiers, amplifiers, discriminators
- Practical demonstration: detector response to different radiation sources

Day 3: Calibration and Quality Assurance

- Calibration standards and traceability
- Calibration setup for different instrument types
- Statistical analysis of counting data
- Background radiation measurement and subtraction
- Daily functional checks: battery, response, alarm tests
- Record keeping and documentation requirements

Day 4: Survey Meter Operation and Interpretation

- Survey meter controls and display functions
- Range selection and scale reading
- Time constant and response time effects
- Survey techniques: grid, spiral, and hotspot searches
- Identifying and mitigating electromagnetic interference
- Practical exercise: performing a simulated area survey

Day 5: Contamination Monitoring Instruments

- Types of contamination: loose, fixed, and airborne
- Direct monitoring techniques: probe selection and scanning speed
- Indirect monitoring: smear test protocol and counting
- Interpreting contamination limits (e.g., clearance levels
- Decontamination methods and effectiveness checks
- Practical exercise: contamination monitoring of a simulated area

Day 6: Personal Dosimetry and Dose Management

- Dose quantities: equivalent dose, effective dose
- Regulatory dose limits for workers and public
- Passive dosimeter types: TLD, OSL, film badge
- Active dosimeters: features, alarms, data logging
- Dose records and reporting requirements

- ALARA in practice: time, distance, shielding

Day 7: **Advanced Measurement Techniques and Spectroscopy**

- Gamma ray interactions: photoelectric effect, Compton scattering, pair production
- Multichannel analysers and pulse height analysis
- Energy calibration using known sources
- Nuclide identification and peak fitting
- Alpha spectroscopy: sample preparation and resolution
- Practical: identification of unknown source using gamma spectrum

Day 8: **Practical Application in Simulated Scenarios**

- Scenario 1: Routine area survey in a controlled area
- Scenario 2: Contamination incident response
- Scenario 3: Source retrieval and shielding assessment
- Use of combined instruments: survey meter, contamination monitor, dosimeter
- Emergency procedures: evacuation, notification, decontamination
- Report writing: data presentation, conclusions, recommendations

Day 9: **Assessment, Review, and Certification**

- Written assessment covering theory and regulations
- Practical assessment: instrument operation, calibration, survey, contamination monitoring
- Results review and feedback session
- Certification criteria and SAQA credits
- Resources for ongoing learning: manuals, online courses, professional bodies
- Course evaluation and closing

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 3**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 33,300.00	**R 33,300.00**
1	In-House	R 43,300.00	**R 43,300.00**
1	On-Campus (Pretoria)	R 50,000.00	**R 50,000.00**

UPCOMING SESSIONS

Start	End	Method	Venue
03 Aug 2026	13 Aug 2026	On-Campus	Pretoria, South Africa
03 Aug 2026	13 Aug 2026	On-Campus	Lagos, Nigeria
04 Aug 2026	14 Aug 2026	On-Campus	Johannesburg, South Africa
05 Aug 2026	17 Aug 2026	On-Campus	Mauritius
06 Aug 2026	18 Aug 2026	On-Campus	Cape Town, South Africa
07 Aug 2026	19 Aug 2026	On-Campus	Dubai, UAE
10 Aug 2026	20 Aug 2026	On-Campus	Abu Dhabi, UAE
11 Aug 2026	21 Aug 2026	On-Campus	Mauritius

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 119494) 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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