



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

Image Analysis Techniques for Professionals

Law, Military Science and Security / Sovereignty of the State

Unit Standard 244539 · NQF Level 5 · 8 Credits · 5 Days

COURSE OVERVIEW

This course equips professionals with the skills to apply image analysis techniques for extracting meaningful information from digital images. Participants will learn to enhance, segment, and interpret images using industry-standard tools and methodologies, enabling data-driven decision-making in fields such as remote sensing, medical imaging, and quality control.

Category	Law, Military Science and Security
Subfield	Sovereignty of the State
Unit Standard	244539
Accreditation	SAQA Accredited · NQF Level 5 · 8 Credits
Duration	5 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply image enhancement techniques to improve visual quality and feature extraction.
- Analyze image data using segmentation, filtering, and transformation methods.
- Evaluate different image analysis algorithms for specific application contexts.
- Implement image classification and pattern recognition workflows.
- Demonstrate proficiency in using image analysis software tools for practical tasks.
- Interpret and communicate results derived from image analysis effectively.

WHO SHOULD ATTEND

- This course is designed for professionals in fields such as geospatial analysis, biomedical imaging, manufacturing quality assurance, and research who need to apply image analysis techniques in their work.

COURSE OUTLINE

Day 1: Fundamentals of Image Analysis

- Introduction to digital images: pixels, resolution, colour spaces.
- Image acquisition methods: cameras, scanners, sensors.
- Image file formats and compression.
- Overview of image analysis workflow.
- Basic image enhancement: brightness, contrast, histogram equalisation.
- Introduction to image analysis software (e.g., ImageJ, Fiji).
- Ethical considerations in image manipulation.
- Practical exercise: loading and viewing images.

Day 2: Image Preprocessing and Segmentation

- Image filtering: Gaussian, median, and bilateral filters.
- Edge detection: Sobel, Canny, and Laplacian operators.
- Thresholding techniques: global, adaptive, Otsu.
- Region-based segmentation: watershed, region growing.
- Morphological operations: erosion, dilation, opening, closing.
- Hands-on: segmenting cells in microscopy images.
- Quality metrics for segmentation.

Day 3: Feature Extraction and Measurement

- Geometric features: area, perimeter, circularity, Feret diameter.
- Intensity features: mean, standard deviation, integrated density.
- Texture analysis: GLCM, Haralick features.
- Shape descriptors: moments, Fourier descriptors.
- Feature selection: correlation, PCA.
- Statistical analysis: t-tests, ANOVA.
- Practical: measuring particle sizes in an industrial sample.

Day 4: Advanced Image Analysis Techniques

- Introduction to machine learning in image analysis.
- Supervised classification: k-NN, SVM, random forests.
- Object detection: sliding windows, HOG, YOLO.
- Deep learning basics: CNNs, transfer learning.
- Training a simple CNN for image classification.
- Performance metrics: accuracy, precision, recall, F1-score.
- Overfitting and data augmentation.
- Practical: classifying tissue types in histopathology images.

Day 5: Practical Integration and Case Studies

- Building an image analysis pipeline.
- Case study 1: Quality control in manufacturing.
- Case study 2: Medical image analysis (e.g., MRI, X-ray).
- Case study 3: Remote sensing and satellite imagery.
- Automation and batch processing.
- Reporting and visualisation of results.
- Emerging trends: AI in image analysis, cloud-based tools.

- Final project: complete analysis of a provided dataset.

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 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 24,200.00	R 24,200.00
1	In-House	R 31,400.00	R 31,400.00
1	On-Campus (Pretoria)	R 36,200.00	R 36,200.00

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 244539) 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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