



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

Polymer Composite Product Fabrication Techniques Training

Manufacturing, Engineering and Technology / Manufacturing and Assembly

Unit Standard 110281 · NQF Level 2 · 9 Credits · 6 Days

COURSE OVERVIEW

This course equips learners with the skills to fabricate polymer composite products using various techniques such as hand lay-up, spray-up, compression moulding, and resin infusion. It covers material selection, process parameters, quality control, and safety protocols to produce components for industries including automotive, marine, and construction.

Category	Manufacturing, Engineering and Technology
Subfield	Manufacturing and Assembly
Unit Standard	110281
Accreditation	SAQA Accredited · NQF Level 2 · 9 Credits
Duration	6 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply safe working practices and identify hazards associated with polymer composite fabrication.
- Select appropriate reinforcement materials and resins based on product specifications and process requirements.
- Demonstrate proficiency in hand lay-up, spray-up, and compression moulding techniques.
- Implement quality control measures to ensure product conformity and defect minimization.
- Analyze process parameters to optimize cure cycles and material usage.
- Evaluate finished products for mechanical properties and surface finish against industry standards.

WHO SHOULD ATTEND

- This course is intended for technicians, production supervisors, and artisans involved in the manufacturing of polymer composite products, as well as individuals seeking to enter the composites industry.

COURSE OUTLINE

Day 1: Introduction to Polymer Composites and Materials

- Overview of polymer composites: matrix and reinforcement.
- Types of fibers: glass, carbon, aramid – properties and applications.
- Types of resins: thermosetting and thermoplastic.
- Additives, fillers, and core materials.
- Material handling and storage requirements.
- Health and safety: MSDS, PPE, ventilation.
- Introduction to fabrication methods overview.
- Quality control fundamentals.

Day 2: Hand Lay-Up and Spray-Up Techniques

- Hand lay-up process: mould preparation, gel coat application, reinforcement layering, resin impregnation.
- Spray-up process: equipment setup, chopper gun operation, layering.
- Mould types: open, closed, male, female.
- Release agents and mould preparation.
- Resin mixing and catalyst measurement.
- Consolidation techniques: rollers, brushes, squeegees.
- Common defects: air bubbles, dry spots, resin-rich areas.
- Curing and demoulding considerations.

Day 3: Vacuum Bagging and Resin Infusion Techniques

- Vacuum bagging: components, bagging film, breather, release film.
- Vacuum pump operation and leak detection.
- Resin infusion (VARTM): dry reinforcement, resin distribution media, vacuum.
- Resin flow management and infusion timing.
- Advantages: higher fibre volume, reduced voids.
- Troubleshooting common issues: dry spots, race tracking.
- Quality checks during curing.
- Safety with vacuum systems and resin fumes.

Day 4: Compression Moulding and Filament Winding

- Compression moulding: sheet moulding compound (SMC) and bulk moulding compound (BMC).
- Mould design, heating, and press operation.
- Process parameters: temperature, pressure, cure time.
- Filament winding: wet winding, dry winding.
- Winding patterns: helical, hoop, polar.
- Mandrel types and removal.
- Applications: pipes, tanks, pressure vessels.
- Quality control: fibre tension, resin content.

Day 5: Pultrusion and Advanced Fabrication Methods

- Pultrusion: reinforcement creel, resin bath, heated die, puller.
- RTM process: preform placement, mould clamping, resin injection.
- Advanced methods: automated fibre placement (AFP), tape laying.
- Post-processing: trimming, drilling, bonding, painting.
- Inspection methods: visual, ultrasonic, tap testing.

- Repair techniques for composite structures.
- Environmental considerations and waste management.
- Industry 4.0 in composite manufacturing.

Day 6: Integration, Quality Assurance, and Project Work

- Project planning: material selection, process choice, tooling.
- Quality assurance: inspection checkpoints, documentation.
- Non-destructive testing: tap test, ultrasonic, thermography.
- Defect analysis and corrective actions.
- Health and safety review: emergency procedures.
- Final project: fabricate a small composite part (e.g., tray, panel).
- Presentation of project and peer review.
- Course summary and assessment.

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 **9 NQF credits** at **NQF Level 2**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 25,600.00	R 25,600.00
1	In-House	R 33,300.00	R 33,300.00
1	On-Campus (Pretoria)	R 38,400.00	R 38,400.00

UPCOMING SESSIONS

Start	End	Method	Venue
03 Aug 2026	10 Aug 2026	On-Campus	Mauritius
04 Aug 2026	11 Aug 2026	On-Campus	Cape Town, South Africa
05 Aug 2026	12 Aug 2026	On-Campus	Dubai, UAE
06 Aug 2026	13 Aug 2026	On-Campus	Pretoria, South Africa
06 Aug 2026	13 Aug 2026	On-Campus	Lagos, Nigeria
07 Aug 2026	14 Aug 2026	On-Campus	Johannesburg, South Africa
10 Aug 2026	17 Aug 2026	On-Campus	Cape Town, South Africa
11 Aug 2026	18 Aug 2026	On-Campus	Dubai, 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 110281) 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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