Accredited Africa Training Institute for Capacity Development
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COURSE BROCHURE

Structural Steelwork Detail And Arrangement Drawing Techniques Training

Physical Planning and Construction / Civil Engineering Construction

Unit Standard 114210 · NQF Level 4 · 28 Credits · 25 Days

COURSE OVERVIEW

This course equips learners with the skills to produce detailed structural steelwork drawings and arrangement diagrams for construction projects. Participants will learn to interpret engineering specifications, apply industry standards, and create accurate drawings that facilitate fabrication and erection. The training ensures compliance with South African building regulations and enhances workplace safety through precise documentation.

Category	Physical Planning and Construction
Subfield	Civil Engineering Construction
Unit Standard	114210
Accreditation	SAQA Accredited · NQF Level 4 · 28 Credits
Duration	25 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS — verifiable online

LEARNING OUTCOMES

- Interpret engineering drawings and specifications to extract steelwork requirements.
- Apply South African standards (e.g., SANS) and industry conventions to structural steelwork detailing.
- Produce detailed arrangement drawings showing member locations, connections, and elevations.
- Generate fabrication details including weld symbols, bolt schedules, and material lists.
- Verify drawing accuracy against structural calculations and site conditions.
- Demonstrate quality control procedures for checking and revising steelwork drawings.

WHO SHOULD ATTEND

- This course is designed for engineering draftsmen, detailers, and technicians involved in structural steelwork design and documentation.
- It is also suitable for site supervisors and project managers seeking to understand steelwork drawing conventions.

COURSE OUTLINE

Day 1: Introduction to Structural Steelwork and Drawing Standards

- Overview of structural steelwork in building and civil engineering
- Introduction to relevant standards: SANS 10163, SANS 10029, ISO 129
- Types of structural steel sections: I-beams, channels, angles, hollow sections
- Basic drawing conventions: line types, scales, dimensioning
- Drawing layout: title blocks, revision tables, parts lists
- Introduction to Bill of Materials (BOM

Day 2: Reading and Interpreting Structural Steelwork Drawings

- General arrangement (GA) drawings: plan, elevation, section views
- Detail drawings: connection details, base plates, stiffeners
- Symbol library: structural, welding, surface finish, datum
- Weld symbols per SANS 10163 and ISO 2553
- Bolt types, grades, and hole sizes
- Dimensioning rules: chain, baseline, ordinate
- Tolerances and fit-up allowances

Day 3: Manual Drafting Techniques for Steelwork Details

- Drafting tools: T-square, set squares, compass, scales
- Line weights and types: visible, hidden, centre, cutting plane
- Hatching patterns for steel sections
- Drawing a simple beam-to-column connection manually
- Dimensioning practice: linear, angular, radial
- Adding notes and welding symbols

Day 4: Introduction to CAD for Steelwork Detailing

- CAD software overview (AutoCAD, DraftSight, or similar
- Setting up drawing units, limits, and grid
- Basic draw commands: line, polyline, circle, rectangle, offset
- Modify commands: trim, extend, move, copy, rotate
- Layer management: naming conventions, colours, line types
- Creating and inserting blocks for standard sections

Day 5: CAD Detailing of Simple Steel Connections

- Creating a bolted end-plate connection detail
- Using dynamic blocks for bolts, nuts, washers
- Dimensioning with linear, aligned, and angular dimensions
- Adding multileaders for weld symbols and notes
- Creating and managing text styles
- Plotting and scaling for output

Day 6: Detail Drawing of Beam-to-Column Connections

- Types of beam-to-column connections: simple, rigid, semi-rigid
- Shear tab (fin plate) connection details
- End-plate moment connection details
- Welding symbols for fillet and groove welds

- Stiffener placement and detailing
- Gusset plates for bracing connections

Day 7: Base Plate and Anchor Bolt Details

- Column base plate types: pinned, fixed, moment-resisting
- Anchor bolt types, grades, and embedment details
- Base plate dimensions: thickness, plan size, stiffeners
- Grout pocket and shear key details
- Erection aids: levelling nuts, shims
- Detailing of base plate with stiffeners

Day 8: Bracing and Truss Details

- Types of bracing: X-bracing, V-bracing, K-bracing
- Truss configurations: Warren, Pratt, Howe
- Gusset plate geometry and connection detailing
- Bolt group design: edge distances, spacing
- Welding of bracing members to gussets
- Clearance and fit-up considerations

Day 9: Staircases, Handrails, and Platforms

- Staircase components: stringers, treads, risers, landings
- Handrail and guardrail standards (SANS 10400
- Platform framing: beams, joists, chequer plate/grating
- Connection details for handrails to structure
- Dimensioning of rise, going, and headroom
- Welding and bolting of platform components

Day 10: General Arrangement Drawings – Plans and Elevations

- GA drawing purpose: overall structural layout
- Setting up grid lines and column centres
- Placing beams, columns, and bracing on plan
- Elevation views: showing vertical members and connections
- Dimensioning strategy for GA drawings
- Key plans and section cuts

Day 11: Sections and Details in GA Drawings

- Section lines and arrows on GA drawings
- Creating detailed cross-sections through connections
- Showing clearances, edge distances, and bolt projections
- Referencing detail drawings from GA
- Parts list and material take-off from GA
- Revision control and issue management

Day 12: Steelwork Scheduling and Bill of Materials

- Steelwork schedule format: member mark, section, length, quantity
- Weight calculation per member and total
- BOM structure: main members, connections, fasteners
- Material coding for cutting lists
- Marking and tagging for shop and site

- Integration with detailing software

Day 13: Introduction to 3D Modelling for Steelwork

- 3D modelling software overview (Tekla, Revit, or similar
- Setting up a 3D model: grids, levels, coordinate system
- Creating columns, beams, and braces in 3D
- Basic connection modelling: bolted and welded
- Viewing and navigation: orbit, zoom, section boxes
- Exporting 2D views from 3D model

Day 14: 3D Modelling of Connections and Assemblies

- Parametric connection components: end plates, stiffeners
- Modelling a moment connection with haunches
- Column splices and beam splices
- Creating 3D assemblies and sub-assemblies
- Generating shop drawings from 3D views
- Clash detection basics

Day 15: Fabrication Drawings and Shop Detailing

- Shop drawing content: single-part drawings, assembly drawings
- Dimensioning for fabrication: overall, hole centres, bevels
- Weld symbols and welding procedure specifications
- Surface preparation and painting requirements
- Marking and numbering for fabrication
- Quality control checks on drawings

Day 16: Erection Drawings and Site Installation Details

- Erection drawing purpose: sequence, lifting, temporary works
- Showing lifting lugs and lifting points
- Site bolting and welding details
- Interface with concrete foundations and embedded plates
- Clearance for erection tolerances
- Safety notes and erection sequence

Day 17: Quality Assurance and Drawing Checking Procedures

- Drawing checking checklist: dimensions, symbols, notes
- Common errors: missing dimensions, wrong weld symbols
- Interdisciplinary coordination checks
- QA/QC documentation: drawing register, revision history
- Non-conformance reports and corrective actions
- Approval workflow and sign-off

Day 18: Advanced Topics – Curved Steel, Plate Girders, and Complex Geometry

- Curved steel beams: rolling, bending, and detailing
- Plate girder design and detailing: web stiffeners, flange splices
- Haunched beams and tapered sections
- Complex connections: skewed, sloped, and eccentric
- Fabrication limitations: bending radii, welding access
- 3D modelling of complex geometry

Day 19: **Project – Complete Steelwork Detailing Package (Part 1)**

- Project brief: small steel-framed building or mezzanine
- Setting up model and drawing templates
- Producing GA plan and elevation views
- Detailing typical connections (beam-column, base plates
- Creating steelwork schedule and BOM
- Review and self-check against checklist

Day 20: **Project – Complete Steelwork Detailing Package (Part 2) and Review**

- Completing remaining details and schedules
- Plotting and exporting final drawings (PDF, DWG
- Peer review and instructor feedback session
- Common pitfalls and best practices
- Career pathways and continuing professional development
- 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 **28 NQF credits** at **NQF Level 4**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 74,200.00	**R 74,200.00**
1	In-House	R 96,500.00	**R 96,500.00**
1	On-Campus (Pretoria)	R 111,300.00	**R 111,300.00**

UPCOMING SESSIONS

Start	End	Method	Venue
03 Aug 2026	04 Sep 2026	On-Campus	Dubai, UAE
04 Aug 2026	07 Sep 2026	On-Campus	Pretoria, South Africa
04 Aug 2026	07 Sep 2026	On-Campus	Lagos, Nigeria
05 Aug 2026	08 Sep 2026	On-Campus	Johannesburg, South Africa
06 Aug 2026	09 Sep 2026	On-Campus	Mauritius
07 Aug 2026	10 Sep 2026	On-Campus	Cape Town, South Africa
10 Aug 2026	11 Sep 2026	On-Campus	Pretoria, South Africa
11 Aug 2026	14 Sep 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 114210) 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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