

REINFORCED CONCRETE DESIGN TO SANS 51992-1-1:2025

OVERVIEW

The Reinforced Concrete Design to SANS 51992-1-1:2025 Training Course provides engineers, technologists, technicians, and construction professionals with practical and theoretical knowledge for the analysis and design of reinforced concrete structures in accordance with South Africa's newly adopted Eurocode-based concrete design standard.

This course introduces participants to the principles of limit state design, structural analysis, durability requirements, reinforcement detailing, and the design of reinforced concrete elements such as beams, slabs, columns, staircases, foundations, and retaining walls. Emphasis is placed on practical calculations, code interpretation, compliance requirements, and real-world engineering applications.

SANS 51992-1-1:2025 is South Africa's adoption of Eurocode 2 (EN 1992-1-1), replacing the long-standing SANS 10100-1 standard, which is scheduled for withdrawal by the end of 2026.

By the end of this course, participants will be able to:

- Understand the philosophy and structure of SANS 51992-1-1:2025.
- Apply limit state design principles according to Eurocode 2.
- Determine material properties and design strengths.
- Perform flexural, shear, torsion and axial load design.
- Design beams, slabs, columns and foundations.
- Evaluate serviceability requirements.
- Apply durability and concrete cover requirements.
- Design reinforcement detailing and anchorage.
- Interpret South African National Annex requirements.
- Transition existing designs from SANS 10100 to SANS 51992.

WHO SHOULD ATTEND

- Civil Engineers
- Structural Engineers
- Consulting Engineers
- Technologists and Technicians
- Project Engineers
- Construction Professionals
- Design Office Personnel
- Municipal Engineers

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REINFORCED CONCRETE DESIGN TO SANS 51992-1-1:2025

Introduction to the New Concrete Code

- Evolution from SANS 10100 to SANS 51992
- Eurocode framework
- Relationship between:
 - SANS 51992-1-1
 - SANS 51992-1-1-1 (National Annex)
 - EN 1990
 - EN 1991
- Design philosophy
- Reliability and safety concepts
- Ultimate and Serviceability Limit States

Material Properties

- Concrete strength classes
- Characteristic and design strengths
- Stress-strain relationships
- Reinforcing steel properties
- Partial safety factors
- Design values of materials
- Concrete creep and shrinkage

Structural Analysis and Load Effects

- Load combinations
- Dead loads
- Imposed loads
- Wind loads
- Accidental actions
- Analysis methods
- Redistribution of moments

Flexural Design of Reinforced Concrete Beams

- Design assumptions
- Neutral axis depth
- Lever arm calculations
- Singly reinforced sections
- Doubly reinforced sections
- Minimum reinforcement
- Maximum reinforcement

Serviceability Requirements

- Crack control
- Deflection control
- Span-to-depth ratios
- Reinforcement spacing limitations

Design of Reinforced Concrete Slabs

- One-way slabs
- Two-way slabs
- Flat slabs
- Ribbed slabs
- Punching shear considerations

Shear Design

- Shear resistance mechanisms
- Concrete shear capacity
- Shear reinforcement design
- Variable angle truss model
- Deep beam considerations

Punching Shear Design

- Critical perimeters
- Design procedures
- Reinforcement requirements
- Flat slab punching checks

Design of Reinforced Concrete Columns

- Short columns
- Slender columns
- Axial load and bending interaction
- Biaxial bending
- Second-order effects

Reinforcement Detailing

- Anchorage requirements
- Development length
- Lap lengths
- Curtailment rules
- Reinforcement arrangement

Durability Design

- Exposure classes
- Environmental actions
- Concrete cover requirements
- Corrosion protection
- Service life design

Foundation Design

- Pad foundations
- Combined footings
- Strip foundations
- Foundation reinforcement
- Bearing pressure verification

Torsion Design

- Torsional behaviour
- Combined bending, shear and torsion
- Torsional reinforcement

Retaining and Water-Retaining Structures

- Crack width limitations
- Serviceability considerations
- Reinforcement requirements
- Durability considerations

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LIVE ONLINE TRAINING | 23 -24 JULY 2026



Booking Contact (Approving Official) Mr/Mrs/Ms

Full Names: _____

Company name: _____

Direct Tel No: _____ E-mail: _____ Fax: _____

VAT No: _____

Address: _____

Signature _____

Person Responsible for Finance: _____ Direct Tel No: _____ Date of Payment: _____

BANKING DETAILS:

Independent Training Management Pty Ltd

Bank: FNB South Africa

Account Number: 62685879276

Branch Code: 251650

Branch: Randburg

THE FOLLOWING HEREBY CONFIRM ATTENDANCE TO THE WORKSHOP

Delegate 1: Names _____

Position: _____ E-Mail: _____

Delegate 2: Names _____

Position: _____ E-Mail: _____

Delegate 3: Names _____

Position: _____ E-Mail: _____

Delegate 4: Names _____

Position: _____ E-Mail: _____

Delegate 5: Names _____

Position: _____ E-Mail: _____

All fees are current at the time of going to print; however, we reserve the right to change them.

2. Additional Delegate Rates:

Additional delegate rates apply when bookings are made at the same time on the same course.

3. Confirmation Instructions:

On receipt of this submitted booking form and payment or purchase order you will receive a confirmation letter by email confirming your participation in the training event.

This includes a location map with directions and venue details and starting times.

4. Attendance:

Please note that no learner will be permitted to attend any training course without proof of payment or an order no.

5. Delegate Substitution:

Substitutes can be made at any time without incurring a penalty. Please inform us in writing so we can make the necessary arrangements for the new learner.

6. Payment:

Payment can be made by cheque or by electronic transfer, and must be received 5 working days prior to the commencement of the course.

Please quote the reference number from your invoice and organisation name so that payments can be tracked. All cancellations must be done in writing and emailed directly to Independent Training. Management Inform us immediately if you have to re-schedule or cancel the booking so that we can inform the caterers and conference venue.

The following charges apply if you cancel:

- 11 - 30 days before a course = 10% of the course fee

- 6 - 10 days before a course = 20% of the course fee

- 4 - 6 days before a course = 30% of the course fee

- 1-3 days before a course = 50% of the course fee