



Construction Materials and Building Systems Course

24 – 28 January 2027
Johannesburg

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Ref: 521_140855 **Date:** 24 – 28 January 2027 **Location:** Johannesburg **Fees:** 6000 Euro

Overview

Construction Materials and Building Systems Course is a five-day foundation course for architects, junior engineers, construction managers, site engineers, inspectors, quantity surveyors, facilities professionals, and client representatives. Participants compare material properties, select assemblies, coordinate structural, envelope, finish, and building-service interfaces, review submittals and mockups, inspect installation, interpret tests, diagnose defects, and consider durability, sustainability, and maintenance. Agile Leaders Training Center presents a practical workflow that produces a Materials and Systems Coordination Pack.

Who Should Attend

- Architects and junior engineers selecting and coordinating building materials
- Construction managers and site engineers supervising installation interfaces
- Inspectors reviewing submittals, samples, mockups, tests, and completed work
- Quantity surveyors and client representatives comparing performance and lifecycle implications
- Facilities professionals receiving building systems and maintenance information

The course requires no advanced design calculations. It focuses on material behavior, system interfaces, inspection, and defect prevention rather than structural engineering design, specialist laboratory certification, or product endorsement.

Departments and Industries

The course supports teams responsible for selecting, delivering, and maintaining built assets.

- Building, civil, infrastructure, utilities, and industrial construction
- Architecture, engineering, construction management, and quality functions
- Contractors, suppliers, consultants, developers, and client organizations
- Facilities, maintenance, procurement, sustainability, and asset-management teams
- Property, education, healthcare, hospitality, retail, and public works portfolios

Learning Objectives

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



- Compare material properties, uses, limitations, durability, and lifecycle needs
- Coordinate structural, envelope, finish, and building-service system interfaces
- Review material submittals, samples, mockups, inspection points, and test records
- Assess heat, air, moisture, water, sound, fire, and movement considerations
- Diagnose common material and interface defects and plan corrective action
- Build a Materials and Systems Coordination Pack

Course Agenda

Day 1: Material Performance and Selection

- Material Property, Function, and Exposure Matrix
- Strength, Stiffness, Movement, Moisture, and Durability Concepts
- Service Environment and Material Compatibility Review
- Initial Cost, Lifecycle Cost, Maintenance, and Replacement Comparison
- Material Submittal, Sample, and Approval Checklist

Day 2: Structural and Partition Materials

- Concrete Constituents, Placement, Curing, and Defect Signals
- Masonry Units, Mortar, Joints, Support, and Moisture Control
- Structural Steel, Metals, Connections, Protection, and Corrosion
- Timber Products, Moisture, Movement, Protection, and Interfaces
- Partitions, Linings, Ceilings, and Support-System Coordination

Day 3: Envelope Roofing and Waterproofing Systems

- Wall and Facade Assembly Layer Map
- Air, Water, Vapor, and Thermal-Control Continuity
- Roofing, Drainage, Flashing, and Penetration Details
- Below-Grade Waterproofing and Joint Treatment
- Envelope Mockup, Testing, and Defect-Response Plan

Day 4: Finishes Services and Building Performance

- Floor, Wall, and Ceiling Finish Substrate Readiness
- Sealant, Joint, Adhesive, and Coating Compatibility
- Thermal Bridge and Insulation Installation Review
- Acoustic Assembly and Service-Penetration Coordination
- Mechanical, Electrical, Plumbing, and Fire-System Interface Map



Day 5: Materials and Systems Practice

- Exercise: Compare Materials Against Performance Requirements
- Exercise: Review Submittals, Samples, and Test Evidence
- Exercise: Diagnose Envelope and Finish Interface Defects
- Exercise: Coordinate Building Services and Maintenance Access
- Capstone Exercise: Materials and Systems Coordination Pack

Practical Exercises

The course uses suggested activities to connect material choices with buildable, inspectable, and maintainable system assemblies.

- Suggested activity: compare candidate materials for exposure, compatibility, durability, maintenance, and lifecycle cost.
- Suggested activity: review a material submittal against specification, sample, test, storage, installation, and approval requirements.
- Suggested activity: trace heat, air, moisture, and water-control layers through an envelope junction and identify discontinuities.
- Suggested activity: investigate a defect and coordinate corrective action across structure, envelope, finishes, and services.

FAQs

Who suits the Construction Materials and Building Systems Course?

It suits professionals who select, procure, coordinate, inspect, receive, or maintain construction materials and integrated building systems.

Does the course teach structural design calculations?

No. It builds practical understanding of materials and system behavior, interfaces, inspection, testing, defects, and lifecycle needs without replacing specialist design.

Why are building-system interfaces important?

Many defects occur where different materials, trades, movements, environmental-control layers, or service penetrations meet. Clear interface details and accountable inspections reduce gaps.

What evidence supports material acceptance?

Evidence may include approved submittals, certificates, samples, mockups, delivery and storage records, inspection results, test reports, installation checks, and closed corrective actions.



What does the capstone deliverable contain?

The Materials and Systems Coordination Pack includes material comparisons, submittal checks, assembly maps, interface registers, inspection and test points, defect analyses, service coordination, and maintenance handover needs.

Conclusion

Participants take back a Materials and Systems Coordination Pack that connects material selection, performance, compatibility, envelope continuity, finishes, services, inspection, testing, defects, durability, and maintenance. The pack supports informed construction decisions without replacing specialist design, laboratory certification, or project-specific approvals.