



Building Acoustics and Noise Control Training: Sound Insulation, Reverberation and HVAC Noise



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Introduction:

Building acoustics and noise control training, covering sound insulation, reverberation and HVAC noise, is a 5-day course for architectural, building services and facility teams that ends with an Acoustic Design Brief and Noise Control Plan for a case building. Organisations face occupant complaints, failed pre-completion tests and costly remedial works when partitions, finishes and plant are chosen without clear acoustic targets. Nominees already design, coordinate or operate buildings and work through case studies built on real drawings, room schedules and test reports. CoreConcept Training Center delivers this building acoustics and noise control course.

Course Objectives:

- Set noise criteria and reverberation targets for each room type using NC, NR and RC curves and occupant activity
- Select wall, floor and ceiling build-ups that meet airborne and impact sound insulation targets and control flanking paths
- Predict reverberation time with the Sabine and Eyring formulas and choose absorptive finishes rated to ISO 11654
- Apply acoustic design measures to offices, classrooms, hospital rooms and auditoria according to their speech and privacy needs
- Reduce HVAC duct-borne noise and plant vibration through attenuators, isolation mounts and plant room layout
- Plan field measurements to ISO 16283 and ISO 3382 and write acoustic treatment specifications that contractors can price and test

Target Audience:

- Architectural design teams responsible for room layouts, partitions, ceilings and interior finishes
 - Building services design teams responsible for HVAC, plumbing and plant selection and their noise output
 - Design coordination teams that reconcile acoustic, fire, structural and services requirements in construction details
 - Facility operation teams that handle occupant noise complaints and plan refurbishment of occupied buildings
 - Project delivery teams that review acoustic submittals and arrange pre-completion testing before handover
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Course Outline:

Day 1: Sound Fundamentals, Decibels and Noise Criteria for Spaces

- Sound Pressure Level, Frequency and Octave Band Analysis Basics
- Decibel Addition, A-Weighting and Equivalent Continuous Level
- NC, NR and RC Curves for Room Noise Criteria
- ABC Strategy of Absorb, Block and Cover in Workplaces
- Acoustic Current-State Survey of Occupant Noise Complaints

Day 2: Sound Insulation Ratings, Room Acoustics Models and Standards

- ISO 717-1 Weighted Sound Reduction Index Rating Method
- STC and OITC Ratings for Partitions and Facade Elements
- Mass Law, Decoupling and Cavity Absorption in Wall Design
- Sabine and Eyring Reverberation Time Prediction for Rooms
- ISO 11654 Weighted Absorption Coefficient for Acoustic Finishes

Day 3: Acoustic Design of Walls, Floors, Rooms and Building Types

- Floating Floors and Resilient Ceilings for Impact Sound Isolation
- Flanking Path Detailing at Junctions, Ducts and Facades
- Open-Plan Office Acoustics with Sound Masking and Screens
- Classroom and Hospital Room Acoustic Design Targets Worksheet
- Auditorium Volume, Shaping and Diffuser Placement Decisions

Day 4: HVAC Noise, Environmental Noise Intrusion and Acoustic Testing

- HVAC Duct-Borne Noise Path Analysis and Attenuator Selection
- Plant Room Vibration Isolation Mounts and Inertia Bases
- Environmental and Industrial Noise Intrusion Assessment for Facades
- ISO 16283 Field Measurement of Airborne and Impact Insulation
- ISO 3382 Reverberation Measurement and Pre-Completion Test Failures

Day 5: Case Study: Acoustic Design Brief and Noise Control Plan

- Case Building Drawings, Room Schedule and Noise Criteria Review
 - Partition and Floor Build-Up Selection Against Insulation Targets
 - Room Finishes Absorption Calculation and Reverberation Check
 - Acoustic Treatment Specification Clauses and Submittal Review Checklist
 - Acoustic Design Brief and Noise Control Plan Completion
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Skills You Will Gain:

- Noise Criteria Setting
- Partition Sound Insulation Design
- Flanking Path Control
- Reverberation Time Calculation
- Room Acoustics Planning
- HVAC Noise Attenuation
- Acoustic Field Test Planning
- Acoustic Specification Writing

Why Attend This Course:

- Deliver an Acoustic Design Brief and Noise Control Plan for a case building to the design manager and the facility owner for approval
- Choose partition, floor and ceiling build-ups and absorptive finishes on evidence rather than on supplier claims
- Avoid failed pre-completion tests, occupant complaints and remedial works caused by unchecked flanking paths and noisy plant
- Pass room noise criteria tables, reverberation calculation sheets and specification checklists to design and maintenance colleagues

Conclusion:

Back at work, the participant gives the design manager and the facility owner an Acoustic Design Brief and Noise Control Plan that states room noise criteria, insulation and reverberation targets, chosen build-ups, plant noise measures and the test regime. Designers use it to fix details before tender, project teams use it to review submittals and book field tests, and facility teams use it to settle complaints. After the first pre-completion test or occupant survey, the unit should compare results with the targets and revise the brief where gaps appear.

Frequently Asked Questions FAQ:

What should participants know before a building acoustics and noise control course?

Participants should be able to read architectural and services drawings and understand basic building construction. No prior acoustics training is needed. Bringing a room schedule, a partition detail or a noise complaint record from their own building helps them apply the case work directly.

How does building acoustics and noise control differ from an environmental noise monitoring course?

It concentrates on the inside of buildings: room noise criteria, wall and floor insulation, reverberation, services noise and pre-completion testing. Environmental monitoring courses cover outdoor sampling programmes, site boundary surveys and permit reporting, which this course treats only as inputs to facade design.

Why does building acoustics and noise control treat flanking paths as a design priority?

A wall can meet its laboratory rating yet fail on site because sound travels around it through floors, ceilings, ducts and facade junctions. Detailing these paths early is the most reliable way to pass field tests and avoid opening finished construction later.

What do participants take back from the building acoustics and noise control course?

Participants take back an Acoustic Design Brief and Noise Control Plan for a case building, with room noise criteria tables, build-up selection sheets, reverberation calculations, HVAC noise measures and specification clauses they can adapt to their own projects.