CAD Standards and Digital Engineering Quality Assurance Training Course



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4100 € (Per Person)

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Course Introduction / Overview:

In the rapidly evolving landscape of digital engineering and construction, the integrity of digital assets is paramount. This course provides a comprehensive framework for establishing and maintaining quality assurance in CAD standards and digital engineering deliverables. It moves beyond basic drafting techniques to instill a culture of quality that minimizes errors, reduces rework, and enhances project collaboration. As highlighted by experts like Charles M. Eastman in the "BIM Handbook," the transition to digital project delivery necessitates rigorous standards to ensure data interoperability and lifecycle value. This program, offered by BIG BEN Training Center, is meticulously designed to equip professionals with the skills to develop, implement, and audit robust quality control systems. Participants will explore international standards such as ISO 19650, learn to manage a Common Data Environment (CDE) effectively, and master techniques for validating digital models and drawings. The curriculum focuses on practical application, ensuring that the quality assurance processes learned are not just theoretical but are directly applicable to real-world project challenges, safeguarding the accuracy and reliability of all digital engineering outputs from conception to handover.

Target Audience / This training course is suitable for:

- CAD Managers and Technicians.
- BIM Coordinators and Managers.
- Digital Engineering Leads.
- Project Engineers and Managers.
- Quality Assurance and Quality Control (QA/QC) Professionals.
- Design and Engineering Team Leaders.
- Architects and Architectural Technologists.
- Structural and MEP Engineers.
- Information Managers.
- Construction Project Managers.

Target Sectors and Industries:

- Architecture, Engineering, and Construction (AEC).
- Manufacturing and Product Design.
- Oil and Gas.
- Utilities and Infrastructure.
- Aerospace and Automotive.
- Governmental bodies and public works agencies.
- Urban Planning and Development.
- Facility Management and Operations.

Target Organizations Departments:

- Engineering and Design Departments.
- Project Management Office (PMO).
- Quality Assurance/Quality Control (QA/QC) Department.
- Digital Innovation and Technology Teams.
- Information Management Department.
- Construction and Site Operations.
- Technical Services and Drafting Departments.

Course Offerings:

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

- Develop and implement comprehensive CAD and digital modeling standards.
- Establish robust QA/QC workflows for digital engineering deliverables.
- Audit projects for compliance with internal and external standards like ISO 19650.
- Manage and validate data within a Common Data Environment (CDE).
- Automate quality control checks to improve efficiency and accuracy.
- Effectively manage design reviews and model federation processes.
- Ensure data integrity and interoperability across different software platforms.
- Create detailed compliance reports for project stakeholders.
- Mitigate risks associated with poor data quality in digital project delivery.
- Lead the adoption of best practices in digital asset management.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be immersive, practical, and highly interactive, fostering a deep understanding of digital quality assurance principles. We believe in learning by doing, so the course heavily emphasizes hands-on exercises, real-world case studies, and simulated project scenarios. Participants will not just listen to lectures; they will actively engage in developing CAD standard documents, performing mock audits on sample project files, and resolving common data interoperability issues. The program incorporates collaborative workshops where teams work together to solve complex quality control challenges, mirroring the collaborative nature of modern engineering projects. Facilitated group discussions will encourage the sharing of experiences and best practices, while expert-led sessions will provide clear, actionable guidance. Continuous feedback is a cornerstone of our approach, with instructors providing personalized coaching to help participants refine their skills. This blend of theoretical knowledge and practical application ensures that attendees leave with the confidence and competence to implement effective QA frameworks within their own organizations.

Course Agenda (Course Units):

Unit One: Foundations of Digital Engineering Quality

- Introduction to Quality Assurance (QA) and Quality Control (QC) in a digital context.
- The importance of standards in CAD and BIM workflows.
- Overview of international standards (ISO 19650).
- The impact of poor data quality on project lifecycle costs and risks.
- Defining key terminology: digital deliverables, data integrity, and interoperability.
- The role of the Digital Information Manager.
- Establishing a business case for a robust QA/QC program.

Unit Two: Developing and Implementing CAD Standards

- Creating a comprehensive CAD standards manual.
- Defining naming conventions for files, layers, and blocks.
- Standardizing drawing templates, title blocks, and annotation styles.
- Best practices for model setup and coordinate systems.
- Guidelines for 2D and 3D content creation.
- Implementing standards across project teams and software platforms.
- Strategies for training and user adoption.

Unit Three: QA/QC Processes for Digital Models

- Techniques for manual and automated model checking.
- Implementing a structured design review and approval workflow.
- Clash detection principles and resolution strategies.
- Model validation against design criteria and project requirements.
- Ensuring model accuracy, completeness, and consistency.
- Data validation rules and compliance checking.
- Documenting and tracking issues through to resolution.

Unit Four: Managing Digital Deliverables and Data Exchange

- Understanding the Common Data Environment (CDE) workflow.
- Best practices for version control and revision management.
- Protocols for data exchange and model federation (IFC, DWG, etc.).
- Ensuring data security and integrity during transmission.
- Quality checks for project submissions and handovers.
- Archiving digital assets for long-term facility management.
- Generating compliance reports and audit trails.

Unit Five: Advanced QA and Future Trends

- Integrating QA/QC into the entire project lifecycle.
- Leveraging automation and scripting for quality control tasks.
- The role of quality assurance in Digital Twins and smart assets.
- Metrics and KPIs for measuring the effectiveness of a QA program.
- Continuous improvement and updating of standards.
- Preparing for future developments in digital engineering technology.
- Final project: Developing a QA implementation plan for a sample project.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can a robust digital QA framework transition from being a perceived cost center to a strategic driver of project value and risk mitigation?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by adopting a strategic, process-oriented approach rather than focusing narrowly on software-specific tools. While many courses teach how to use features within a particular CAD or BIM application, this program concentrates on building the foundational quality framework that underpins all digital engineering efforts, regardless of the platform used. We emphasize the 'why' behind the standards, empowering participants to think critically and develop bespoke QA/QC systems that align with their organization's specific goals and project types. The curriculum is built around internationally recognized standards like ISO 19650, providing a global best-practice perspective on information management. Furthermore, the course uniquely connects the technical aspects of CAD standards with the broader business implications of data integrity, risk management, and lifecycle asset value. By focusing on creating a culture of quality through effective workflows, compliance auditing, and continuous improvement, this training provides a holistic and enduring skill set that transcends software updates and empowers professionals to lead digital transformation with confidence and competence.