Structural Modelling with BIM Management Essentials

Course Description

This course provides a comprehensive introduction to **Building Information Modelling (BIM)** concepts, standards, and management practices, along with practical training in **Autodesk Revit Structure**. Participants will learn how digital transformation and Industry 4.0 impact the AEC industry, explore BIM dimensions, maturity levels, ISO 19650 standards, and document strategies, and gain hands-on experience in modelling structural foundations, columns, beams, walls, reinforcement, precast, and steel systems. The course bridges management-level BIM knowledge with technical structural modelling workflows to support efficient project delivery.

Audience Profile

- Structural engineers, designers, and consultants
- BIM coordinators and BIM managers in structural projects
- Civil engineering professionals transitioning from CAD to BIM workflows
- Students and professionals seeking structural modelling expertise in Revit

Prerequisites

- Basic knowledge of construction/structural design workflows
- Familiarity with CAD/design tools is beneficial but not mandatory
- General computer literacy

Course Objectives

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

- Understand BIM concepts, terminology, and ISO 19650 standards for structural projects
- Apply Industry 4.0 and digital transformation strategies in the construction sector
- Work with BIM dimensions, maturity levels, and RIBA plan of work
- Implement information delivery plans and document classification systems
- Model structural elements in Revit including foundations, columns, beams, floors, and walls
- Add reinforcement, precast, and steel components with detailing and scheduling
- Create rebar schedules, callouts, sections, and construction documentation
- Collaborate effectively in BIM-based structural projects using worksets and linked files

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- Digital Transformation in Construction Industry
- Advantages & Challenges of Digital Transformation

Module 2: Industry 4.0 in AEC

- Concepts & Principles of Industry 4.0
- Impact on AEC Industry

Module 3: BIM Concepts & Dimensions

- Uses & Benefits of BIM
- Components of BIM
- BIM Terminology
- Dimensions of BIM (3D–10D)
- Evolution of BIM Dimensions

Module 4: BIM Maturity & Workflows

- BIM Maturity Levels (0, 1, 2, 3)
- Benefits of Implementing BIM Levels
- RIBA Plan of Work – Stages

Module 5: Level of Development (LOD)

- Introduction to LODs (100–500)
- LOD & LOIN
- Importance & Benefits of LOD in AEC Projects

Module 6: Information Requirements & Delivery Plans

- Organisational Information Requirements (OIR)
- Asset Information Requirements (AIR)
- Project Information Requirements (PIR)
- Master Information Delivery Plan (MIDP)
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Module 7: BIM Standards & ISO 19650

- Overview of BIM Standards
- ISO 19650 Part 1 – Concepts & Principles
- ISO 19650 Part 2 – Delivery Phase of Assets
- ISO 19650 Part 3 – Operational Phase of Assets
- ISO 19650 Part 4 – Information Exchange
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Module 8: Documentation & Classification

- Document Naming Strategy
- Naming Structures & Rules
- Classification Systems
- OmniClass – Elements by Function, Elements by Form, Products
- UniClass – Systems, Elements/Functions

Part 2: Revit Structure

Module 9: Getting Started with Revit Structure

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- About Structural Elements
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- User Interface & Project Units
- Linking CAD Files & Revit Files

Module 10: Levels & Grids

- Adding & Modifying Levels
- Creating & Managing Grids

Module 11: Core Structural Modelling

- Structural Foundations – Modelling & Placement
- Structural Columns – Modelling & Modification
- Structural Framing – Beams & Beam Systems
- Structural Floors – Creation & Modification
- Structural Walls – Creation & Modification

Module 12: Reinforcement & Families

- Reinforcement Modelling – Adding & Modifying Rebars
- Structural Family Creation – Designing Structural Elements

Module 13: Precast & Steel Modelling

- Precast Walls & Slabs – Creation, Segmentation, Shop Drawings
- Steel Modelling – Columns, Beams, Bracing Systems, Trusses, Connections

Module 14: Scheduling & Detailing

- Scheduling – Columns, Footings, Beams
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- View Management – Duplicate Views, Callouts, Sections
- Details Management – Annotations, Text, Tags, Symbols

Module 15: Documentation & Collaboration

- Sheet Creation & View Management in Sheets
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- Collaboration Tools
- Copy/Monitor
- View Templates & WorkSets Creation