



Future-Oriented Training and Consulting

EXECUTIVE DEVELOPMENT PROGRAM

3D BIM Modeling for Offshore and Onshore Structures with Safety Analysis

Building practical BIM competency for offshore and onshore structures with embedded safety analysis.

Proven Structural BIM Frameworks Structured frameworks for modeling and safety validation.	Executive Case Studies Real-world examples of offshore and onshore structural modeling.
Hands-On Software Exposure Direct exposure to 3D structural modeling software.	Safety-Validated Models Builds the skills to create accurate, safety-validated models.

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Program Overview

This program builds practical BIM competency for modeling offshore and onshore structures while embedding safety analysis into the design process.

Through case studies, executive discussions, simulations, and hands-on exposure to 3D structural modeling software, participants will develop the skills to create accurate, safety-validated models for complex oil and gas structures.

Program Objectives

- **Understand Offshore and Onshore Structures:** Grasp the structural types and configurations used in oil and gas.
- **Model Complex Structures in 3D:** Build accurate 3D models of offshore and onshore structures.
- **Apply 3D Structural Modeling Software:** Use software to model and verify structural designs.
- **Embed Safety Analysis into Models:** Apply safety analysis methods within the modeling process.
- **Coordinate Structural Models Across Disciplines:** Federate models with process and mechanical disciplines.
- **Deliver Safety-Validated Models:** Build the coordination skills to deliver validated models on real projects.

Target Audience

This program is designed for professionals modeling offshore and onshore oil and gas structures, including:

- **Structural Engineers** modeling offshore and onshore structures.
- **BIM Coordinators & Modelers** managing structural models and coordination.
- **Process & Facility Engineers** coordinating structural models with process design.
- **HSE & Safety Engineers** validating safety within structural models.
- **Project & Construction Managers** overseeing structural model delivery.
- **Consultants & BIM Advisors** guiding clients on structural BIM adoption.
- **Entry-Level Engineers & Technicians** building foundational structural modeling skills.

Program Impact

Participants will complete this program with practical structural modeling and safety validation skills. Graduates will return to their organizations ready to create accurate, safety-validated models for complex oil and gas structures.

Program Outline

MODULE 1: Foundations of Offshore and Onshore Structures

- Structural types used in offshore and onshore facilities
- Loads and environmental conditions affecting structures
- Overview of applicable structural and safety codes
- Key terminology and modeling conventions
- Assessing project requirements and constraints

MODULE 2: 3D Modeling of Offshore Structures

- Modeling platforms, jackets, and topside structures
- Managing complex geometry and connections
- Attaching data and parameters to model objects
- Hands-on exposure to offshore modeling software
- Maintaining model accuracy and consistency

MODULE 3: 3D Modeling of Onshore Structures

- Modeling process structures, pipe racks, and vessels
- Managing structural steel and foundation models
- Hands-on exposure to onshore modeling software
- Coordinating models with civil and process disciplines

MODULE 4: Embedding Safety Analysis

- Applying structural safety analysis methods
- Assessing fire, blast, and load safety scenarios
- Documenting safety evidence within the model
- Identifying and resolving safety-related design gaps
- Hands-on exposure to safety analysis tools

MODULE 5: Multi-Disciplinary Coordination

- Federating structural models with other disciplines
- Running clash detection and resolving conflicts
- Coordinating design changes across teams
- Using coordination and review tools

MODULE 6: Structural Analysis Software in Practice

- Modeling structures in analysis software
- Running and interpreting analysis results
- Generating design documentation from software
- Verifying software output against hand calculations
- Avoiding common software modeling errors

MODULE 7: Quality Assurance and Safety Validation

- Reviewing models for code and safety compliance
- Coordinating design checks and peer review
- Managing revisions and design changes
- Reporting validation results to stakeholders

MODULE 8: Fabrication and Construction Coordination

- Coordinating design intent with fabrication teams
- Managing risk from field deviations and errors
- Inspecting fabrication and installation against models

MODULE 9: Delivering Safety-Validated Models

- Leading design teams through validated model delivery
- Managing constructability and safety trade-offs
- Communicating validation results effectively
- Building a culture of quality and precision

MODULE 10: Sustaining Modeling Excellence and Future Readiness

- Embedding lessons learned into future designs
- Anticipating emerging materials and modeling methods
- Sustaining momentum beyond the program