

Building Information Modeling (BIM) Professional Educational Program

Track: BIM Construction Technical Office (MEP)

Track Description

The Construction phase is the stage during which the contractor (or principal contractor where more than one contractor on site at any one time) takes control of the construction site to carry out the path works, and when the works are complete, the contractor hands the site back to client. The contractor shall prepare the construction phase plan to make sure that welfare facilities are in place before any work begins, prepare shop drawings that can be termed to be the bridge between building design and physical buildings. Contractor shall also insure that the project is coordinated, and resolve any outstanding conflicts.

BIM technology supports Mechanical and Electrical Engineers throughout the construction and shop drawing process to manage the construction phase using the latest technological tools and techniques that helps in delivering projects with improved quality and efficiency.

The BIM Construction Technical Office track for mechanical and electrical engineers is developed to serve them to provide clients with methods of preparation for drawings that streamline the detailed requirement for the construction of a building by preparing LOD 400 BIM Model which includes minutest details pertaining to the size, location, shape, assembly and several other vital details.

Objectives

The key objectives of this professional track are:

- ✓ Define Building Information Modeling and Identify its uses throughout the project lifecycle
- ✓ Determine the BIM organization and explain the roles and responsibilities for the BIM project team
- ✓ Apply the tools and techniques that support enhanced collaboration among the project teams



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- ✓ Define and Explain the Common Data Environment (CDE) that supports BIM
- ✓ Identify the most common BIM standards, guidelines and strategies as reference for BIM implementation
- ✓ Explain the level of detail that BIM models can contain and how this relates to the stages of shop drawing and construction
- ✓ Recognize the basics of the modeling process and model management protocol
- ✓ Explain the concept of using the unified referencing system
- ✓ Explain the project detailing and intelligent drafting tools
- ✓ Explain the coordination process in BIM projects
- ✓ Link the itemized project time plan with BIM and prepare 4D sequencing BIM model
- ✓ Link the itemized project cost with BIM and prepare 5D estimating BIM model
- ✓ Identify the information exchange formats and the BIM deliverables
- ✓ Recognize BIM uses in visualization, value analysis, and scope clarification
- ✓ Explain the Fabrication modeling process and Identify requirements for 3D Printing
- ✓ Define the cloud based collaboration environment for construction management



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BIM Construction technical office MEP			
144 hours			
Course Code	Course Title	Core	
BIMCM001	BIM Introduction (Standards, Workflows, and Procedures)	4	
BIMAR001	MEP 3D BIM Modeling Essentials using Revit	20	
BIMAR002	MEP BIM Projects Documentation using Revit advanced tools	20	
BIMCM006	Worksharing and Project Collaboration using Revit	8	
BIMCM004	Advanced Quantification using Revit	4	
BIMCM021	Preparing Project Content Library and template using Revit Families	12	
BIMCM002	BIM Project Design Review using Navisworks	12	
BIMCM003	3D Coordination and Clash Detection using Navisworks	4	
BIMCM008	BIM Project Visual Sequencing and Cost Estimating (4D and 5D Simulation)	4	
BIMMA002	BIM Project Planning and Implementation	20	
BIMCM009	Principals of using Dynamo	16	
BIMMA011	International BIM Standards	8	
BIMPR001	Track Project	12	

Learning Outcomes

Upon reaching the end of this professional track, candidates should have gained the required knowledge and understanding to be able to:

- ✓ Recognize the benefits of BIM at each stage of the project
- ✓ Identify the BIM scope for the Construction Phase
- ✓ Identify who and how the project team participate in BIM project
- ✓ Recognize functionality and characteristics of BIM models
- ✓ Understand the project collaboration procedures and common data environment
- ✓ Understand the unified BIM modeling strategies
- ✓ Develop the BIM Models with high quality and following international modeling procedures
- ✓ Work in a team to produce shop drawings for projects with large scale and complex forms
- ✓ Create and develop the project content library
- ✓ Prepare project details using intelligent parametric tools
- ✓ Perform the 3D coordination process using advanced tools
- ✓ Extract the project quantities from BIM



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- ✓ Integrate the 3D BIM Model with the Analytical Software
- ✓ Visualize the technical issues using 3D presentations
- ✓ Develop a standardized project templates
- ✓ Simulate the project using 4D and 5D analysis
- ✓ Manage the project using cloud based collaboration environment
- ✓ Prepare the pre-fabricated models for manufacturing and 3D printing

Recommended References

The international BIM standards, code of practices, and guidelines are highly recommended as trusted resources, following are some of the well-known BIM related documents:

- The National BIM Standard-United States (NBIMS-US): <http://www.nationalbimstandard.org/>
- BSI BIM: <http://www.bsigroup.com/en-GB/Building-Information-Modelling-BIM/>
- BIM Forum: <http://bimforum.org/>
- The National Institute of Building Sciences: <http://www.nibs.org/>
- BIM excellence: <http://bimexcellence.com/>
- Construction Project Information Committee: <http://www.cpic.org.uk/>
- BIM Task Group: <http://www.bimtaskgroup.org/>
- BIM Talk: <http://bimtalk.co.uk/>
- BIM+Integrated Design: <http://bimandintegrateddesign.com/>
- BIM Expert Community: <http://www.bimexpert.org/>
- AUGI: <http://www.augi.com/>
- Autodesk Education Community: <http://www.autodesk.com/education/home>
- The Revit Kid: <http://therevitkid.blogspot.com.eg/>
- Revit City: <http://www.revitcity.com/>
- Autodesk BIM 360: <https://bim360.autodesk.com/>
- Autodesk 3D Printing solution: <https://www.autodesk.com/solutions/3d-printing>
- Autodesk Fusion 360: <https://www.autodesk.com/products/fusion-360/>



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