



معهد علوم الهندسة للتدريب والتطوير
Engineering Science Institute For Training

BUILDING INFORMATION MODELLING (BIM)

Training Program Guide

Architecture, structure, MEP, Sustainable And Management



ALEXANDER BRENNER
ARCHITECTS

BIM Training Bundles

Science Engineering Institute

ESI for Training & Development provide a high quality training in engineering fields via qualified instructors, with all its specializations. ESI woks under the supervision of the Technical and Vocational Training Corporation (TVTC) & the Saudi Council of engineers (SCE). Esi has internationally accredited from Autodesk, PMI, AACE & VUE.

Benefits of AUTODESK Training and Certification

- Communicate with impact using integrated 3D rendering tools
- Gain mastery of Autodesk applications.
- Graduate with sought-after expertise.
- Demonstrate your knowledge and skill to employers.
- Add a valuable credential to your resume.
- Separate yourself from the comp

BIM Services

ESI will provide a full consultation service for organizations; that's will include:

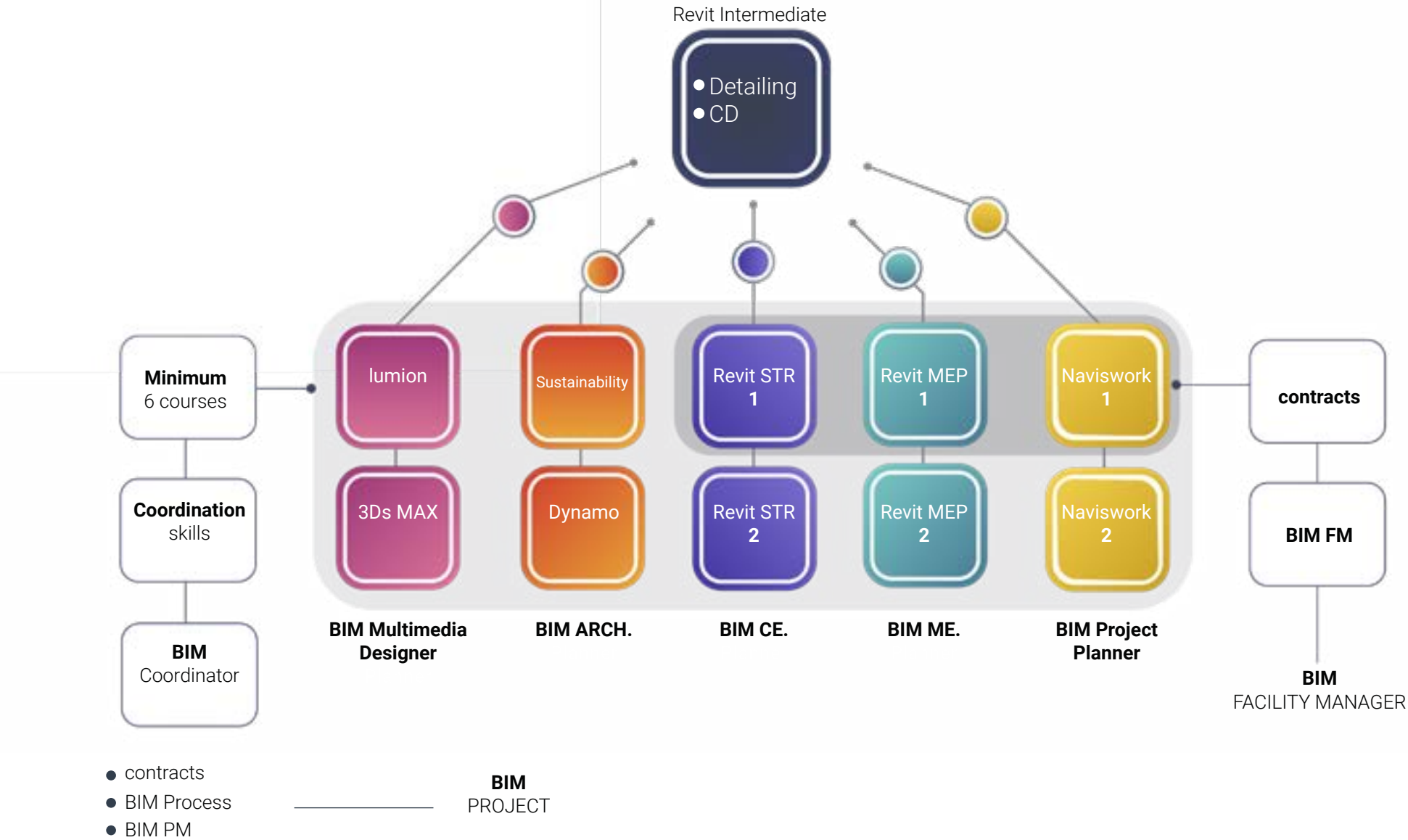


BIM Training Roadmap

Along with our expert partners in BIM and from our long experience with training individuals and organizations within construction sector in Saudi Arabia, the BIM training roadmap have developed to help organizations and individuals to implement BIM in order to gain the benefits of BIM. The BIM training roadmap covers the theoretical and technical part of BIM; and it has been accredited by the Saudi Council of Engineers, Technical and Vocational Training Corporation. The BIM training roadmap is developed based on disciplines' background; Modelers, architects, engineers, constructors, multimedia designers, facility managers, quantity surveyors, project planners, project coordinators and Construction manager Two-Way Bilingual Education method, Arabic and English, will be used to train participants. Please see the BIM training roadmap description next page.



Introduction to Revit



THE FUTURE IS TODAY

What is BIM?

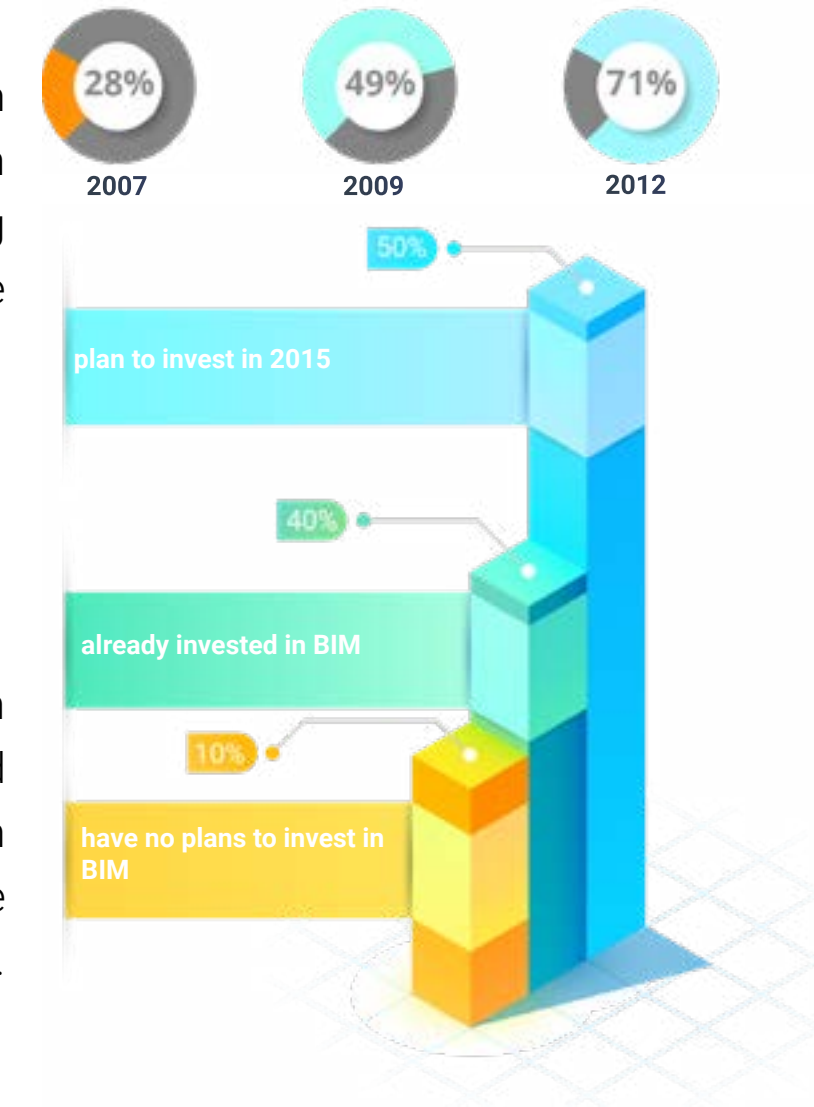
Building Information Modelling is an innovation in design & construction. It is transforming the way of construction projects are designed, constructed and managed; delivering greater return on investment for organizations of all size

BIM Implementation

The uncountable benefits of implementing BIM within construction projects has helped to reduce cost, carbon dioxide, errors and omissions; and improve productivity, building performance with high accuracy. That has motivated more governments to make the implementation of BIM mandatory for all public projects..

LEVELS OF BIM ADOPTION IN NORTH AMERICA

Source: McGraw-Hill Construction, 2012



BIM Modeler Bundle

The BIM Modeller Bundle includes Two courses; the candidate could receive the Bundle certificate after completing 50 hours of professional Course Bundle. To complete the professional Bundle requirements, the candidate must complete the full list of core courses (50 Hours).

Bundle description

The **Bundle** main object to explain the basics of BIM as a concept. It will explain BIM stages, standards, and abbreviations and overview of how the system works. Then the Bundle will present one of the leading BIM tools, Revit Software. The Bundle will include Basics of modeling by Revit for different disciplines. The attendee will be able to work on Revit and generate basic BIM models.

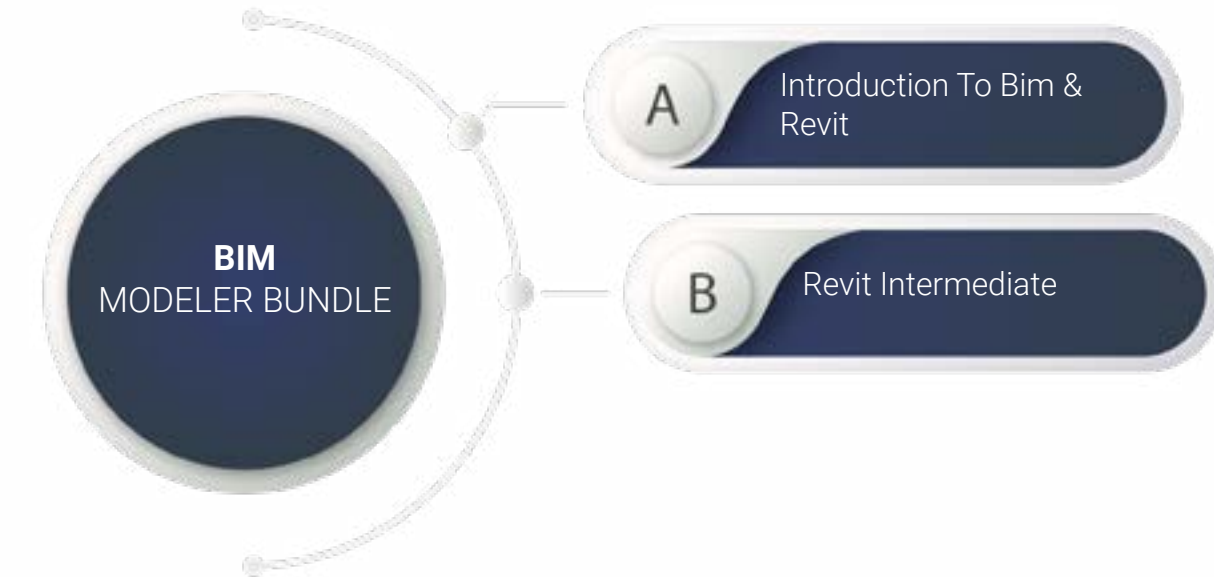
Bundle key objectives

- **Define** Building Information Modeling and Identify its uses throughout the project lifecycle.
- **Identify** the most common BIM standards, guidelines, and strategies as reference for BIM implementation.
- **Recognize** the basics of the modeling process.
- **Collaborate** with the project design scopes and minimize rework.
- **Identify** techniques and workflows for digitally sketching and visualizing.

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Phase.
- **Verify** design ideas through rapid visualization.
- **Visually** review design alternatives in real-time for effective decision making.
- **Ability** to review and understand any BIM model
- **Convert** the conceptual design model into a building information model to continue adding detail for further design development

Course Bundle List





BIM

Architecture Bundle

The BIM Architecture Design professional Bundle includes 6 courses. The candidate could receive the Bundle certificate after completing 110 hours of professional Course Bundle. To meet the professional Bundle requirements, the candidate must complete the full list of Main courses (70 Hours) and complete (40 Hours) of the additional courses from the list.

Bundle description

The Bundle main object to explain the basics of BIM as a concept. It will explain BIM stages, standards, and abbreviations and overview of how the system works. Then the Bundle will present one of the leading BIM tools, Revit Software. The Bundle will include Basics of modeling by Revit for different disciplines. The attendee will be able to work on Revit and generate basic BIM models.

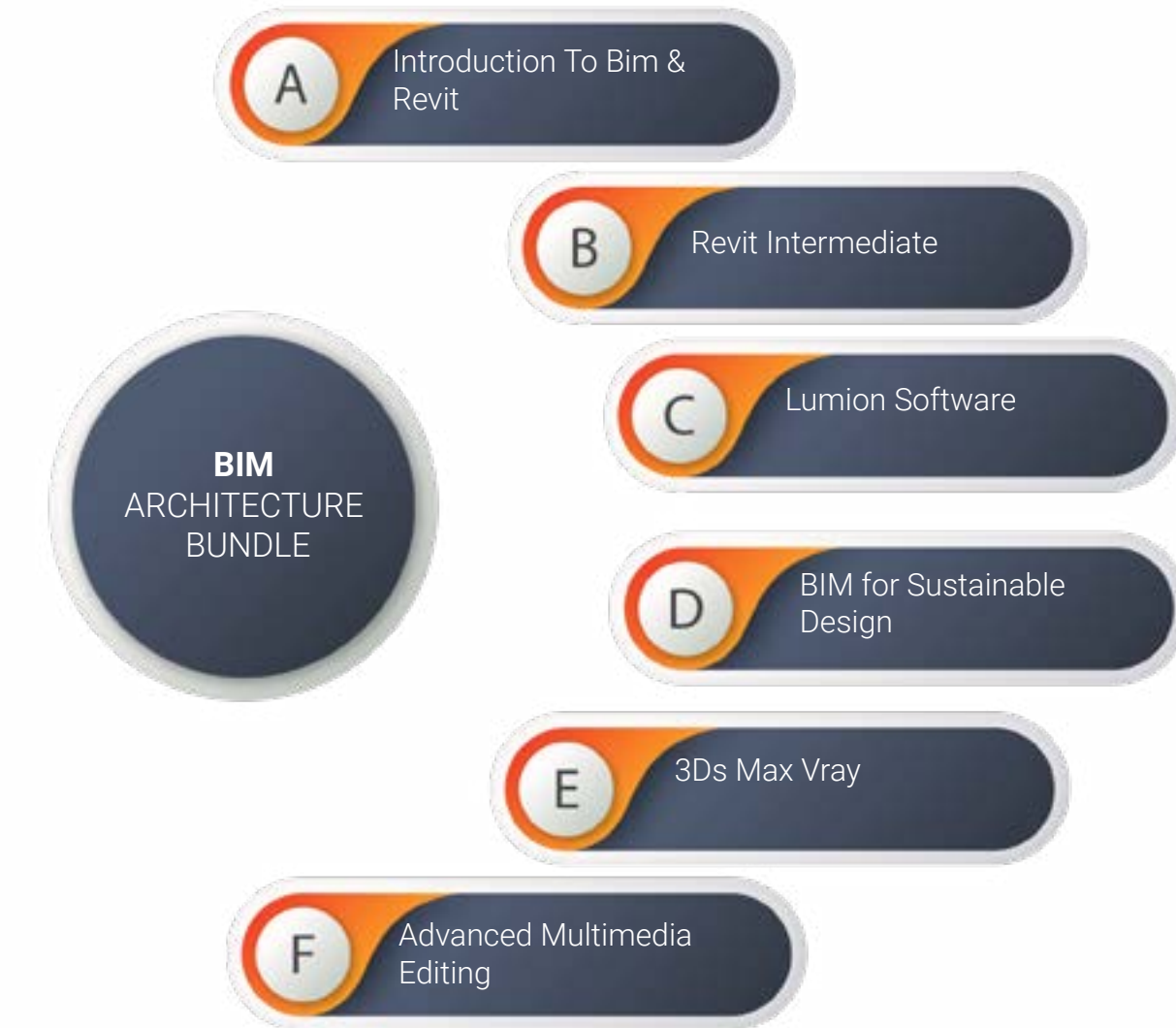
Bundle key objectives

- **Define** Building Information Modeling and Identify its uses throughout the project lifecycle.
- **Identify** the most common BIM standards, guidelines, and strategies as reference for BIM implementation.
- **Recognize** the basics of the modeling process.
- **Collaborate** with the project design scopes and minimize rework.
- **Identify** techniques and workflows for digitally sketching and visualizing.

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Phase.
- **Verify** design ideas through rapid visualization.
- **Visually** review design alternatives in real-time for effective decision making.
- **Ability** to review and understand any BIM model
- **Convert** the conceptual design model into a building information model to continue adding detail for further design development

Course Bundle List





BIM Structural Bundle

The BIM Design Development (Structure) professional Bundle includes 6 courses, the candidate could receive the Bundle certificate after completing 120 hours of professional Course Bundle. To complete the professional Bundle requirements, the candidate must successfully complete the full list of main courses (100 Hours) and complete (20 Hours) of additional courses.

Bundle description

BIM technology supports Structural Engineers throughout the design process. Gain more insight earlier in the process to optimize designs for clients' requirements. BIM software helps in delivering projects with improved quality and efficiency. The BIM Design Development Bundle is developed to serve Structural Engineers to provide clients with an intelligent BIM model additional to drafted 2D drawings that shall illustrate the project as it would look when it's constructed, those 2D drawings are to be extracted from the 3D BIM model. The Design Development Documents shall illustrate and describe the refinement of the design of the project, establishing the scope, relationships, forms, size and appearance of the project by means of plans, sections and elevations, typical construction details, and equipment layouts, ...etc. Designer shall also insure that the project is coordinated, and resolve any outstanding conflicts.

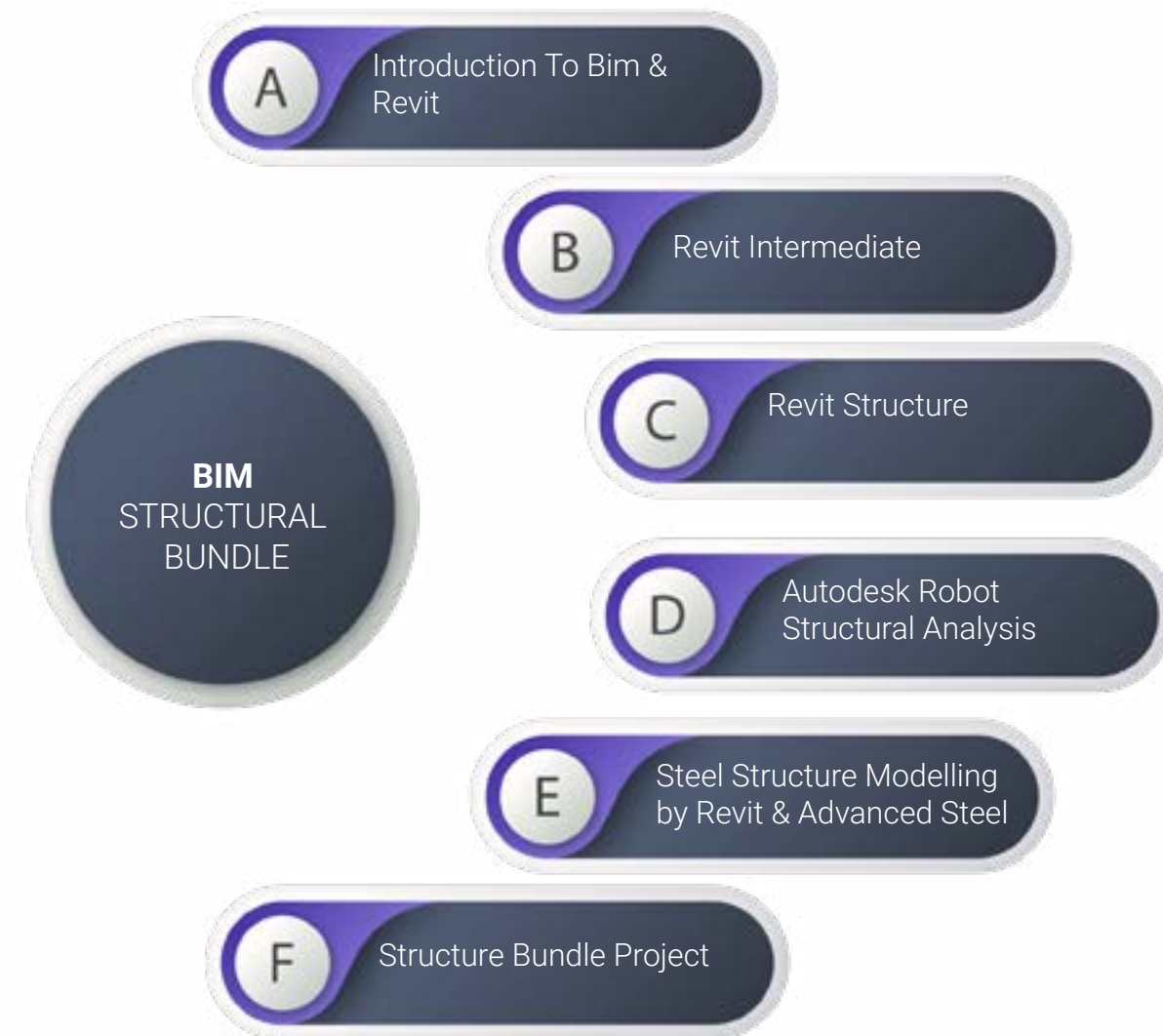
Bundle key objectives

- **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.
- **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 design, construction, and maintenance stages.
- **Recognize** the basics of the modeling process and model management protocol.
- **Explain** the concept of using the unified referencing system.
- **Explain** the coordination process in BIM projects.
- **Identify** the information exchange formats and the BIM deliverables.
- **Explain** the methods and tools used for integrating the Analytical Model with the 3D BIM (Revit) Model.
- **Recognize** BIM uses in visualization, value analysis, and scope clarification.

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Development Phase.
- **Identify** who and how the design development 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 and develop the project with large scale and complex forms.
- **Create** and develop the project content library.
- **Perform** the 3D coordination process using advanced tools.
- **Extract** the project quantities from BIM.
- **Integrate** the 3D BIM Model with the Analytical Software.
- **Visualize** the technical issues using 3D presentations.
- **Develop** standardized project templates.

Course Bundle List



BIM MEP Bundle



The BIM (MEP) professional Bundle includes 5 courses, the candidate could receive the Bundle certificate after completing 90 hours of professional Course Bundle. To complete the professional Bundle requirements, the candidate must successfully complete the full list of main courses (75 Hours) additional to successfully complete (20 Hours) of additional courses.

Bundle description

BIM technology supports MEP Engineers throughout the design process. Gain more insight earlier in the process to optimize designs for clients' requirements. BIM software helps in delivering projects with improved quality and efficiency. The BIM Design Development Bundle is developed to serve MEP Engineers to provide clients with an intelligent BIM model additional to drafted 2D drawings that shall illustrate the project as it would look when it's constructed. Those 2D drawings are to be extracted from the 3D BIM model. The Design Development Documents shall illustrate and describe the refinement of the design of the project, establishing the scope, relationships, forms, size and appearance of the project by means of plans, sections and elevations, typical construction details, and equipment layouts, ...etc. The designer shall also ensure that the project is coordinated and resolve any outstanding conflicts.

Bundle key objectives

- **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.
- **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 design, construction, and maintenance stages.
- **Recognize** the basics of the modeling process and model management protocol.
- **Explain** the concept of using the unified referencing system.
- **Explain** the coordination process in BIM projects.
- **Identify** the information exchange formats and the BIM deliverables.
- **Explain** the methods and tools used for integrating the Analytical Model with the 3D BIM (Revit) Model.
- **Recognize** BIM uses in visualization, value analysis, and scope clarification.

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Development Phase.
- **Identify** who and how the design development 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 and develop the project with large scale and complex forms.
- **Create** and develop the project content library.
- **Perform** the 3D coordination process using advanced tools.
- **Extract** the project quantities from BIM.
- **Integrate** the 3D BIM Model with the Analytical Software.
- **Visualize** the technical issues using 3D presentations.
- **Develop** standardized project templates.

Course Bundle List





BIM

Project Planning & Construction Management Bundle

The BIM Project Planning & Construction Management professional Bundle includes 5 courses, the candidate could receive the Bundle certificate after completing 85 hours of professional Course Bundle. To complete the professional Bundle requirements, the candidate must successfully complete the full list of Main courses (75 Hours) additional to successfully complete (15 Hours) of additional courses.

Bundle description

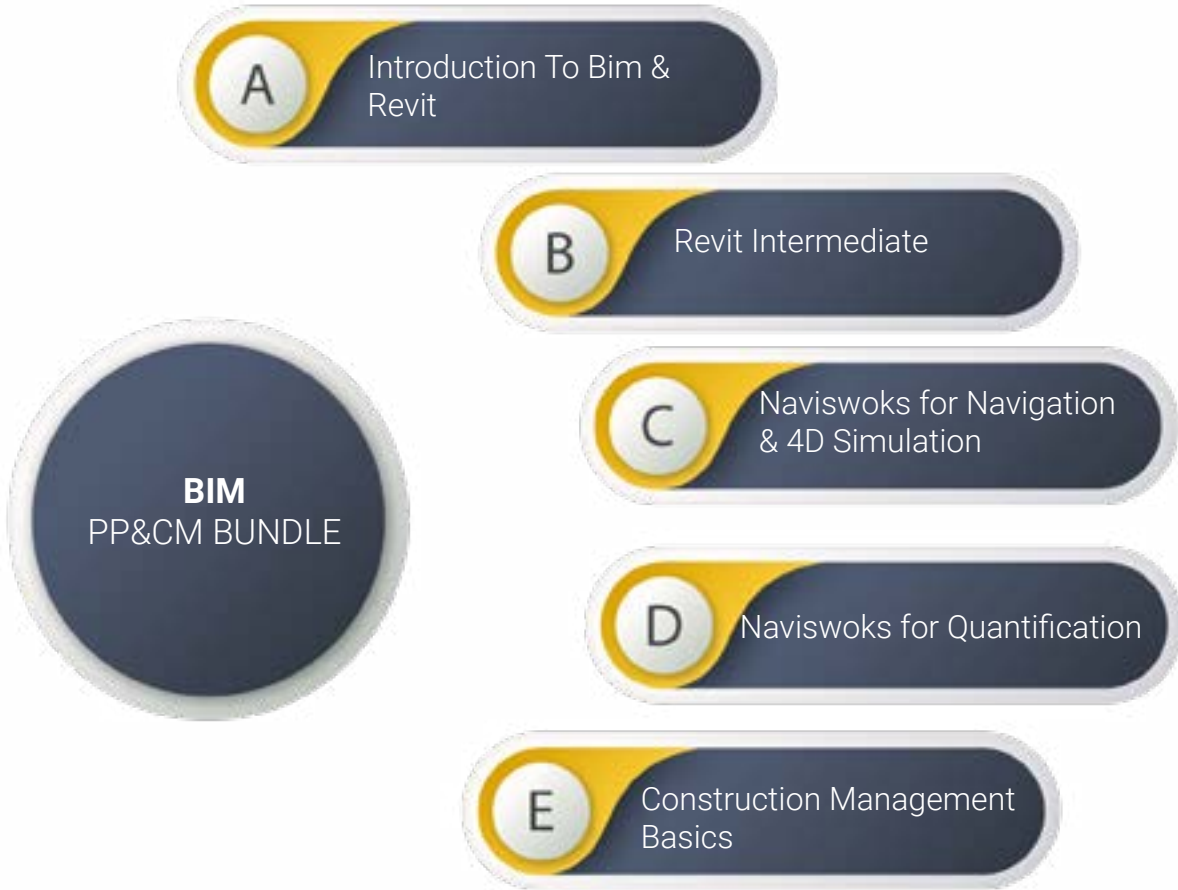
The construction project manager's responsibility is to keep the project moving according to plan. The goal is to manage the project until the closeout phase within schedule and budget, while still meeting building codes, procedures, and specs. A construction project manager may also be charged with setting the parameters, finances, calendar, vetting and hiring subcontractors and on-site workers, developing a strategy for potential conflict resolution, and more. BIM technology supports construction project managers throughout the whole project life cycle and especially manages the construction phase using the latest technological tools and techniques to control the construction process and deliver projects with improved quality and efficiency. The BIM Project Planning and Construction Management Bundle is developed to provide solutions, explore and evaluate a project's constructability before it's built, improve cost reliability, visualize construction processes, increase coordination efficiency between stakeholders throughout the design and construction process, and better predict, manage and communicate project outcomes.

Bundle key objectives

- **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.
- **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 design, construction, and maintenance stages.
- **Recognize** the basics of the modeling process and model management protocol.
- **Explain** the concept of using the unified referencing system.
- **Link** the itemized project time plan with BIM and prepare a 4D sequencing BIM model.
- **Link** the itemized project cost with BIM and prepare a 5D estimating BIM model.
- **Identify** the information exchange formats and the BIM deliverables.
- **Recognize** BIM uses in visualization, value analysis, and scope clarification.
- **Define** the cloud-based collaboration environment for construction management
- **Accelerate** project delivery and minimize contractor risk by using cloud-based solutions

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Development Phase.
- **Identify** who and how the design development team participate in BIM project.
- **Recognize** functionality and characteristics of BIM models.
- **Understand** the project collaboration procedures and common data environment.
- **Perform** the 3D coordination process using advanced tools.
- **Extract** the project quantities from BIM.
- **Visualize** the technical issues using 3D presentations.
- **Simulate** the project using 4D and 5D analysis.
- **Manage** the project using a cloud-based collaboration environment.
- **Automated** Bundling of projects Planned Percent Completion value with reports that help chart performance.
- **Manage** and Control Documents and Information through a cloud-based platform.
- **Manage** field processes such as quality, safety, and commissioning checklists, and distribution of plans and drawings.
- **Connect** the entire project team and help streamline BIM project workflows.



BIM

Quantity Surveyor Bundle



The BIM Quantity Surveying and Material Take-off Bundle includes 5 courses. The candidate could receive the Bundle certificate after completing 90 hours of professional Course Bundle. To meet the professional Bundle requirements, the candidate must complete the full list of Main courses (75 Hours) additional to complete (15 Hours) of additional courses.

Bundle description

Accurate Quantification is the key of successful project control. The Bundle will focus on the Basics of BIM and how to navigate and understand any project. Then how to use BIM tools to classify elements and code them. The course will explain quantities extraction and BOQ generation using BIM.

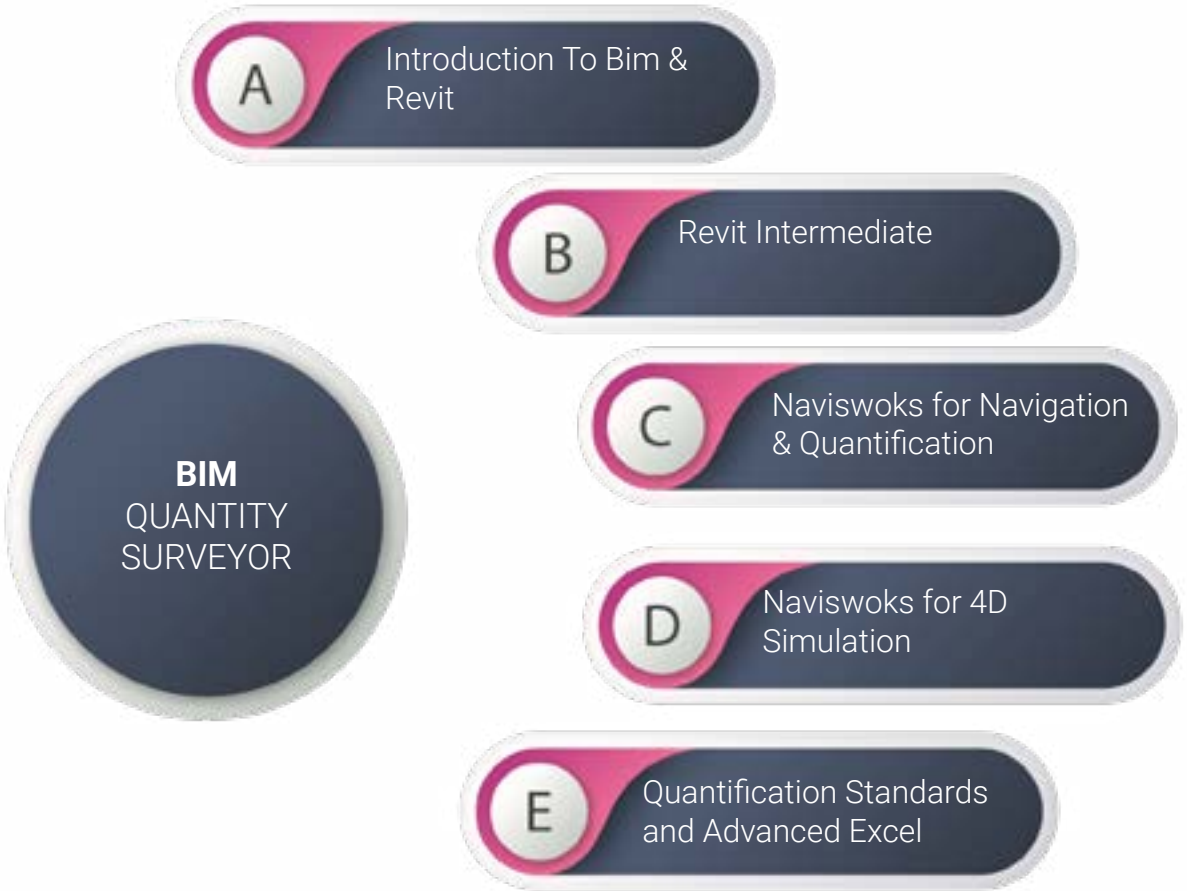
Bundle key objectives

- **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.
- **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 design, construction, and maintenance stages.
- **Recognize** the basics of the modeling process and model management protocol.
- **Explain** the concept of using the unified referencing system.
- **Link** the itemized project time plan with BIM and prepare a 4D sequencing BIM model.
- **Link** the itemized project cost with BIM and prepare a 5D estimating BIM model.
- **Identify** the information exchange formats and the BIM deliverables.
- **Recognize** BIM uses in visualization, value analysis, and scope clarification.
- **Define** the cloud-based collaboration environment for construction management
- **Control** material and Bundle it using BIM and Cloud-Based solutions.

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Development Phase.
- **Identify** who and how the design development team participate in BIM project.
- **Recognize** functionality and characteristics of BIM models.
- **Understand** the project collaboration procedures and common data environment.
- **Perform** the 3D coordination process using advanced tools.
- **Extract** the project quantities from BIM.
- **Visualize** the technical issues using 3D presentations.
- **Simulate** the project using 4D and 5D analysis.
- **Manage** the project using a cloud-based collaboration environment.
- **Manage** and Control Documents and Information through a cloud-based platform.
- **Manage** field processes such as quality, safety, and commissioning checklists, and distribution of plans and drawings.
- **Connect** the entire project team and help streamline BIM project workflows.

Course Bundle List



The image shows four bright yellow hard hats arranged on a dark, textured wooden surface. The hats are positioned diagonally from the top left towards the bottom right. The lighting is dramatic, with strong highlights on the smooth, glossy surfaces of the helmets and deep shadows in the crevices of the wood.

BIM Coordinator Bundle

The BIM Coordinator Bundle includes 10 courses. The candidate could receive the Bundle certificate after completing 160 hours of professional Course Bundle. To meet the professional Bundle requirements, the candidate must complete the full list of Main courses (95 Hours) additional to complete (65 Hours) of additional courses.

Bundle description

Successful Coordination is the key to delivering the project on time with fewer losses and the waste of repetitive work. BIM Coordinator Bundle will focus on Advanced BIM usage and coordination skills, how to detect clashes and solve them, and how to facilitate the work between different disciplines.

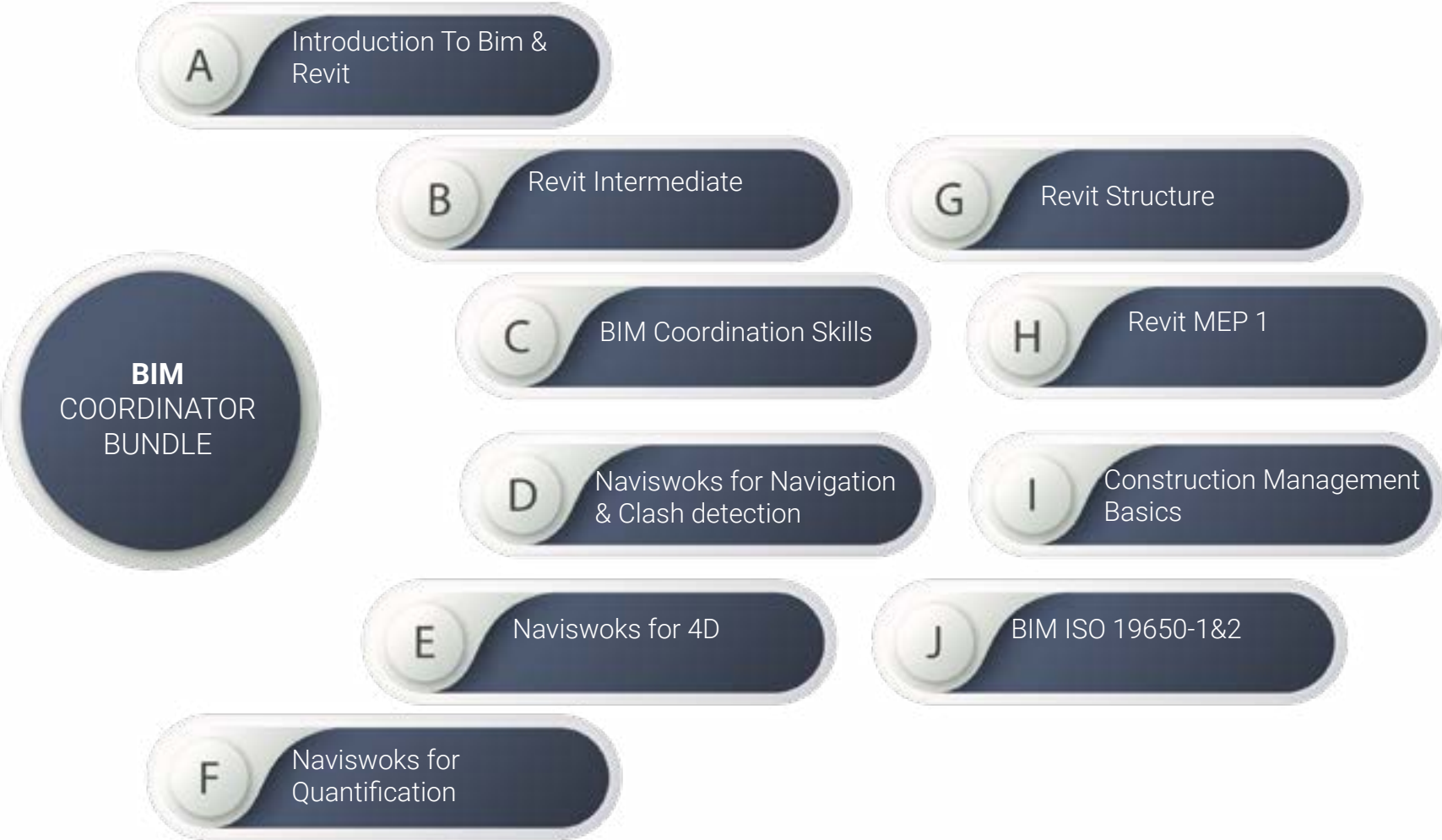
Bundle key objectives

- **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.
- **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 design, construction, and maintenance stages.
- **Recognize** the basics of the modeling process and model management protocol.
- **Explain** the concept of using the unified referencing system.
- **Link** the itemized project time plan with BIM and prepare a 4D sequencing BIM model.
- **Link** the itemized project cost with BIM and prepare a 5D estimating BIM model.
- **Identify** the information exchange formats and the BIM deliverables.
- **Recognize** BIM uses in visualization, value analysis, and scope clarification.
- **Define** the cloud-based collaboration environment for construction management
- **Clash** detection and managing the issues
- **Coordination** skills and reporting

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Development Phase.
- **Identify** who and how the design development team participate in BIM project.
- **Recognize** functionality and characteristics of BIM models.
- **Understand** the project collaboration procedures and common data environment.
- **Perform** the 3D coordination process using advanced tools.
- **Extract** the project quantities from BIM.
- **Visualize** the technical issues using 3D presentations.
- **Simulate** the project using 4D and 5D analysis.
- **Manage** the project using a cloud-based collaboration environment.
- **Manage** and Control Documents and Information through a cloud-based platform.
- **Manage** field processes such as quality, safety, and commissioning checklists, and distribution of plans and drawings.
- **Connect** the entire project team and help streamline BIM project workflows.
- **Detect** Clashes and solve them

Course Bundle List



The BIM Manager Bundle includes 9 courses. The candidate could receive the Bundle certificate after completing 150 hours of professional Course Bundle. To meet the professional Bundle requirements, the candidate must complete the full list of Main courses (110 Hours) additional to complete (40 Hours) of additional courses.

Bundle description

The biggest star in the construction sector at the moment is definitely BIM – Building Information Modeling. BIM manager is to implement all the procedures in BIM and Digital Construction during the design, construction, and handover of a project. A BIM manager leads and supports the use of digital technology to create BIMs in the AEC sector. Technology is revolutionizing the way we learn, work, communicate, and perform a lot of daily tasks. In the middle of all the digital transformations that are changing our lives is architecture.

Bundle key objectives

- **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.
- **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 design, construction, and maintenance stages.
- **Recognize** the basics of the modeling process and model management protocol.
- **Explain** the concept of using the unified referencing system.
- **Link** the itemized project time plan with BIM and prepare a 4D sequencing BIM model.
- **Link** the itemized project cost with BIM and prepare a 5D estimating BIM model.
- **Identify** the information exchange formats and the BIM deliverables.
- **Recognize** BIM uses in visualization, value analysis, and scope clarification.
- **Understanding** Client BIM Project Requirements
- **Manage** Project Procedures and standards
- **Understand** BIM Execution Plan

Bundle Learning Outcomes

- **Recognize** the benefits of BIM at each stage of the project.
- **Identify** the BIM scope for the Design Development Phase.
- **Identify** who and how the design development team participate in BIM project.
- **Recognize** functionality and characteristics of BIM models.
- **Understand** the project collaboration procedures and common data environment.
- **Perform** the 3D coordination process using advanced tools.
- **Manage** the project using a cloud-based collaboration environment.
- **Manage** and Control Documents and Information through a cloud-based platform.
- **Connect** the entire project team and help streamline BIM project workflows.
- **Create** BIM Execution Plan
- **Identify** client EIR
- **Apply** International BIM Standard in the organization.

Course Bundle List

