CAD Drafting Singapore Pte Ltd
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Contact: +65 9157 3363

BIM MODELLING COURSE (FULL) OUTLINE

NO.	TOPICS	LEARNING OUTCOME
	PART 1: THE BASICS	
1.	**Introduction to BIM**	
1.1.	What is BIM?	To understand the relation between BIM & construction life cycle.
1.2.	What is Revit?	To understand that Revit is not the only BIM software.
1.3.	BIM vs Autodesk Revit	To understand that BIM is a process, not a software.
1.4.	Construction Life Cycle	To understand how BIM supports the construction life cycle of a project.
1.5.	Level of Development	To relate level of detail follows the construction lifecycle.
1.6.	Construction Life Cycle vs Level of Development	To understand the relation between CLC & LOD.
1.7.	Typical Modelling Process	To understand the typical modelling process when a project starts.
1.8.	Typical Modelling Process vs Construction Life Cycle	To understand the relation between modelling process & CLC.
1.9.	Typical Modelling Process vs Level of Development	To understand the relation between modelling process & LOD.
2.	**Revit Interface**	
2.1.	Navigation	To demonstrate zoom, pan and rotate.
2.2.	Revit Interface Overview	To recognise the interface of Revit.
2.3.	Properties	To demonstrate changing components and editing component properties.
2.4.	Project Browser	To navigate to all views and understand their definitons
2.5.	View Control	To practise changing settings of the view controls.
2.6.	Ribbon	To understand the different segments of the Ribbon
2.7.	Selection Control	To understand the different type of selection.
2.8.	Quick Access	To understand most used commands in the quick access tool bar
3.	**General Commands**	
3.1.	3D View	To go to 3D view using Quick Acess or double clicking in Project Browser.
3.2.	Select	To demostrate 3 types of selection.
3.3.	Selection Control	To perform selections using selection controls.
3.4.	Move	To perform move using move command and hold/drag method.
3.5.	Pin & Un-pin	To perform pining and un-pinning on element or component.
3.6.	Copy	To perform copying using the copy command.
3.7.	Copy & Paste	To perform copy and paste from one view to another.
3.8.	Align	To perform alignment of 2 objects.
3.9.	Mirror	To perform Axis mirroring and Draw Axis mirroring.
3.10.	Trim & Extend	To perform trim/extend for all disciplines.
3.11.	Split Element	To perform splitting of elements for all disciplines.
3.12.	Family Components	To understand the hierachy of a family and hosting differences.
3.13.	Loading Family Components	To perform loading of family using Direct and Opening.
3.14.	Inserting Family Components	To perform inserting component.
3.15.	Loading Autodesk Components	To perform loading of family using Autodesk Library
3.16.	Rotate	To perform manual rotate and spacebar rotate.
3.17.	Filter Selection	To perform filter selection of all columns in the box.
3.18.	View Range	To understand view range and perform adjustment of cut plane.
3.19.	Visibility Graphics	To understand visibility graphics and perform adjustment of any category.
3.20.	Section	To cut a section and enter the view.
3.21.	Section Box	To create and adjust section box.
3.22.	Drawing Tools	To recollect drawing tools from AutoCAD.
4.	**Starting a Project**	
4.1.	Project Requirements	To understand what to look out for in a project.
4.2.	Starting a New project Process	To remember the typical steps to start a project.
4.3.	Project Templates	To understand what are the use of templates.
4.4.	Coordinates	To execute linking of AutoCAD and moving of Project Base Point.
4.5.	Elevation	To create 3 elevations with correct orientation.
4.6.	Levels	To create 3 levels dimensioned accordingly to reference and their plans.
4.7.	Gridlines	To execute drawing, grouping and positioning of gridlines.
4.8.	Cleaning Up	To clean up by adjusting view range, gridlines, levels and setting scale.
4.8.	Control Model	To create and understand the purpose of a control model.

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	PART 2A: ARCHITECTURAL MODEL	
1.	**Designs**	
1.1.	Introduction	To understand the relation between designers and modellers.
1.2.	Linking CAD	To execute linking of AutoCAD Design Drawings
2.	**Modelling**	
2.1.	Creating 3D View	To create 3D view for visual checking.
2.2.	Architectural Columns	To create and place column according to required size.
2.3.	Architectural Walls	To create walls according to required thickness.
2.4.	Architectural Floor	To create floor and dropped floor according to required thickness.
2.5.	Attaching Walls	To attach walls to floor manually and automatically.
2.6.	Doors	To place doors on walls and flip them to the correct position.
2.7.	Windows	To place windows on walls and adjust visibility using view range.
2.8.	Ceiling	To create new ceiling and place in required rooms.
2.9.	Materials	To load a new material and assign it to walls or floors.
2.10.	Staircase	To place staircase, landing and modify settings.
2.11.	Railing	To place railing and modify it's settings.
2.12.	Ramp	To calculate gradient and place ramps without railings.
2.13.	Roof	To model a flat and a sloped roof.
2.14.	Place Components	To place hosted and non-hosted components on different views.
2.15.	Room	To place rooms and adjust room limits.
2.16.	Openings	To create openings using shaft, face and vertical.

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	PART 2B: STRUCTURAL MODEL	
1.	**Designs**	
1.1.	Preparing Structural Model	To create a new model for structural modelling using Structural template.
1.2.	Introduction	To understand the relation between designers and modellers.
1.3.	Linking CAD	To execute linking of AutoCAD Design Drawings
2.	**Modelling**	
2.1.	Creating 3D View	To create 3D view for visual checking.
2.2.	Concrete Columns	To create, place and duplicate concrete columns according to requirement.
2.3.	Steel Columns	To create, place and duplicate steel columns according to requirement.
2.4.	Pedestals	To use column for Pedestals creation and adjust offset.
2.5.	Foundations (Piles & PileCap)	To create a piling plan and place foundations according to requirement.
2.6.	Concrete Beams	To create and place concrete beams using column as reference.
2.7.	Steel Beams	To create and place steel beams using justification.
2.8.	Beam System	To create a new beam system horizontally and vertically.
2.9.	Sloped Beams	To adjust offsets of beams and columns to create a sloped beam.
2.10.	Braces	To place braces using 3D view.
2.11.	Trusses	To load and place a howe flat truss to support a flat roof.
2.12.	Weld Connections	To execute 3 common type of weld connections
2.13.	Bolt Connections	To execute 3 common type of bolt connections
2.14.	Floors	To create and model Structural floors with holes.
2.15.	Walls	To create and insert Structural Wall.
2.16.	Stairs	To place staircase with landing according to requirement.
2.17.	Openings	To create shaft, wall and steel member openings
2.18.	Rebars	To place rebars using manual and area rebar.
2.19.	Modifying Rebars	To extend and add hooks to rebars.

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	PART 2C: MEP MODEL	
1.	**Designs**	
1.1.	Introduction	To understand why are designs important to start modelling.
1.2.	Base (Control) Model	To understand the need to prepare model for model splitting.
1.3.	Base Model - Linking Revit	To execute linking of Architectural Model using Project Base Point.
1.4.	Base Model - Spaces	To place spaces manually and automatically to sync with Architectural Rooms.
1.5.	Base Model - Working Section View	To create a horizontal and vertical working section view.
1.6.	Base Model - Working 3D View	To create a working 3D view.
1.7.	Base Model - Scale	To set scale using single view method and multiple view method.
1.8.	Base Model - Splitting	To split base model into Electrical, ACMV and Plumbing/Sanitary system.
1.9.	AutoCAD Designs	To understand how does design intend converts to Revit.
1.10.	Linking CAD	To execute linking of AutoCAD Design Drawings
2.	**Modelling**	
2.1.	**Electrical Modelling**	
2.1.1.	Typical Electrical Modelling Process	To understand and follow through the process of electrical modelling.
2.1.2.	Loading Electrical Components/Families	To load custom and generic components/families.
2.1.3.	Placing Electrical Components/Families	To execute placing electrical devices and fixtures on relevant hosts.
2.1.4.	Cable Tray Fitting	To load from Autodesk Library and assign all fittings to Cable Tray.
2.1.5.	Cable Tray Routing	To place horizontal and vertical routing while avoiding clashes.
2.1.6.	Conduit Fitting	To load from Autodesk Library and assign all fittings to Conduit.
2.1.7.	Conduit Routing & Clash Solving	To place horizontal and vertical routing while avoiding clashes.
2.1.8.	Conduit Bend Radius	To adjust minimal bending radius and apply changes to all fittings.
2.1.9.	Parallel Conduits	To create new conduits that are parallel to existing conduits automatically.
2.2.0	Circuits	To create both power and swtich circuits.
2.2.	**ACMV Modelling**	
2.2.1.	Typical ACMV Modelling Process	To understand and follow through the process of ACMV modelling.
2.2.2.	Loading Mechanical Components/Families	To load custom and generic components/families.
2.2.3.	Placing Mechanical Components/Families	To execute placing machanical equipment using elevation offset.
2.2.4.	Duplicating Mechanical Components/Families	To duplicate existing family and change the parameters.
2.2.5.	Duct Fittings	To load from Autodesk Library and assign all fittings to Ducts.
2.2.6.	Duct Routing & Clash Solving	To place horizontal and vertical routing while avoiding clashes.
2.2.7.	Flexible Duct Connections	To use flexible duct for connection between equipment and duct.
2.2.8.	Rigid Duct Connections	To use rigid duct for connection between equipment and duct.
2.3.	**Plumbing & Sanitary Modelling**	
2.3.1.	Typical P&S Modelling Process	To understand and follow through the process of P&S modelling.
2.3.2.	Loading Plumbing Components/Families	To load custom and generic components/families.
2.3.3.	Placing Plumbing Components/Families	To execute placing plumbing equipment on relevant hosts.
2.3.4.	Pipe Fittings	To load from Autodesk Library and assign all fittings to created pipes.
2.3.5.	Pipe Routing & Clash Solving	To place horizontal and vertical routing while avoiding clashes.
2.3.6.	Automatic Pipe Connections	To connect pipes using Connect Into.
2.3.7.	Valves	To load and place valves directly on to pipes.
2.3.8.	Tees	To add or remove pipes for Tee Joints.
2.4.	**Combine Model**	
2.4.1.	Link Revit	To link MEP models using Project Base Point.
2.4.2.	Visibility Graphics of Linked Revit	To hide elements that are unnecessary from a linked model.

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	PART 3: DOCUMENTATION	
1.	**Schedules**	
1.1.	Schedule Introduction	To understand the use of schedules and their importance.
1.2.	Determine Schedule Type & Purpose	To state purpose before creating schedules.
1.3.	Creating Schedule	To create schedule type and include relavent fields.
1.4.	Parameters	To update missing parameters using schedule.
1.5.	Filtering	To filter out unneccesary components.
1.6.	Sorting/Grouping	To sort in descending order and group components as an item.
1.7.	Formatting	To use formatting to hide and change headers.
2.	**Creating Sheet**	
2.1.	Sheet Introduction	To understand the use of sheet.
2.2.	Creating Sheet	To create a new sheet by a loaded title-block.
2.3.	Update Title-block	To update contents of the title-block.
2.4.	Inserting Views	To insert multiple views and schedule into sheet.
2.5.	Clean Up Views	To scale all views to appropriate size.
3.	**Exporting**	
3.1.	Exporting Introduction	To understand the different format
3.2.	Export 2D to PDF	To export 2D sheets to PDF using printing command.
3.3.	Export 2D to AutoCAD	To export 2D sheets to AutoCAD using CP83 format.
3.4.	Export 3D to AutoCAD	To export 3D view to AutoCAD.
	END	