

A. SOFTWARE PACKAGE

- AUTOCAD
- REVIT (Architecture, Structure & MEP)
- NAVISWORKS
- MICROSOFT PROJECT
- SPREADSHEETS
- TEKLA STRUCTURES
- SYNCHRO PRO
- PRIMAVERA
- ECONSTRUCT IN-HOUSE SOFTWARE

B. BIM INTERNATIONAL CODES AND STANDARDS

- BS1192:2007.
- PAS1192-2:2013.
- PAS1192-3:2014.
- BS1192-4:2015.
- COBie Data Formulation.

C. TYPE OF GIVEN PROJECT

- Residential Villas.
- Residential (Midrise, Highrise).
- Commercial (Midrise, Highrise).
- Steel Structures.
- Industrial Composite.
- Infrastructure; Road Development projects.

D. INTRODUCTION TO BIM TECHNOLOGY

- What is BIM and how does BIM technology works?
- What is BIM Life-Cycle?
- Why should one opt for BIM?
- When should one opt for BIM?
- BIM for Architects, Civil Engineers, MEP engineer and Project Managers.
- How to get the effective output from BIM model.
- Hands on software on sample templates.
- What are the Advantages and Disadvantages of BIM?

E. INTRODUCTION TO 2D PLANNING

- What is Architectural planning?
- What is structural planning? What are their attributes?
- What is 2D MEP plans and how to formulate them?
- What are GFC Dawings and how to create them?
- How to draw 2D Elevation and Sectional view?
- What is Air and Light Ventilation in 2D planning?
- How is Planning related to Vastu?
- What is Vastu & how does Vastu technology works?
- What is the Significance of Vastu?

F. AUTOCAD: 2D INTERFACE

➤ **INTRODUCTION TO AutoCAD**

- AutoCAD Screen Components
- Invoking Commands in AutoCAD
- AutoCAD Dialog Boxes
- Setting of Drawing Units and Dimension style units.
- Drawing Lines in AutoCAD
- Prompt Coordinate Systems
- Object Selection Methods
- Setting Units Type and Precision
- SETTING the Limits OF A DRAWING

➤ **DRAWING COMMANDS**

- What are the various Drawing Commands used by the working professionals?
- What is Engineering CAD?
- How, when and where to use which command to have the best output and minimum possible time.
- What are the most suitable commands for 2D Architectural planning, Structural planning and MEP planning?
- Learn how to draw Lines, Circles; two points, three points and tangent-tangent-Radius circle, Arcs and its types, Rectangles, Ellipses, Polygon, Polylines, Multiline Infinite Lines etc. effectively.
- Writing a Single Line Text
- How to use Hatching command and its respective purpose.

➤ **MODIFYING COMMANDS**

- What are the various modifying commands; such as - Copy, Move, Stretch, Trim, Extend, Erase, Rotate, Fillet/Chamfer command, Array; Path, Polar & Rectangular command, Offset, Mirror, Block, Scale, Explode etc. Also, how and where to use these commands to prepare the best Plans, GFC, Shop Drawings?
- VPORT command and its significance?
- Layout and its use.

➤ **WORKING WITH DRAWING AIDS**

- Understanding the Concept and use of LAYERS
- Working with Layers
- Object Properties
- What are Xref and 3Dface command and is it useful to industries?

➤ **CREATING TEXT AND TABLES**

- Annotative Objects.
- Annotation Scale.
- Multiple Annotation Scales.
- Controlling the Display of Annotative objects.
- Creating Text.

- Entering Special Characters.
- Creating Multiline Text.
- Editing Text.
- Inserting Table in the Drawing.
- Creating a New Table Style.
- Model Space Viewports, Paper Space Viewports & Layouts.
- Plotting Drawings.
- Hatching Drawings.
- Working With Blocks.

- AutoCAD 3D BASICS INTERFACE:
 - 3D basic commands.
 - Isometric concept and Drawings.
 - Isometric commands.

G. 3D:REVIT

- **INDUSTRIES: REVIT BENEFICIAL FOR:**
 - ARCHITECTURAL MODELLING
 - STRUCTURAL ENGINEERING
 - MEP ENGINEERING

- **FEATURES WITH SPECIFICATION:**
 - a) **ARCHITECTURAL DESIGN:**
 - Conceptual design tools.
 - Architectural modelling.
 - 3D design visualization.
 - Multi-storey stairs.
 - Cloud rendering & Walkthrough.
 - Massing & siting.
 - Design phases and design options.
 - Family creation.
 - In-place component modelling.

 - b) **STRUCTURAL ENGINEERING AND FABRICATION:**
 - Physical and analytical model.
 - Reinforcement detailing.
 - Structural steel modelling.
 - Structural documentation.
 - Bidirectional linking with analysis.
 - Linking with structural fabrication.

 - c) **MEP ENGINEERING AND FABRICATION:**
 - HVAC design and documentation.

- Electrical design and documentation.
- Plumbing design and documentation.
- Fire Protection
- MEP fabrication detailing.
- Fabrication service conversion.
- Fabrication documentation.
- Work-sets & Central file Creation.
- Concept of central file.
- Heating and cooling loads in HVAC system.

H. INTEROPERABILITY AMONG SOFTWARE:

- Introduction of Different file formats.
- Standard file formats for exchange
- Interoperability among software such as;
 - AutoCAD ← to→Revit.
 - Revit ← to→Navisworks.
 - Microsoft Excel ← to→Navisworks .
 - Navisworks ← to→Microsoft Project.
 - Microsoft Project ← to→Microsoft Excel.
 - AutoCAD ← to→ Etabs.
 - Etabs ← to→ Revit.

I. NAVISWORKS:

- GETTING STARTED
 - Getting Started with Autodesk Navisworks.
 - Publishing, Merging/Append, Refreshing, and Emailing Files.
 - Selection Tree and Selecting Objects.
- 3D MODEL REVIEW:
 - Hiding Objects and Overriding Materials.
 - Object Properties.
 - Measuring and Moving Objects.
 - Selection and Search Sets.
 - Viewpoints.
 - Comments, Redlining, and Tabs.
 - Animations.
 - Sectioning.
 - Links.
 - Comparing Models.
 - Navisworks Real-Time Rendering.
 - Switchback.
- CLASH DETECTIVE:
 - Clash Detective Overview.
 - Clash Results.

- Clash Test Reporting.
 - Working with Clash Tests.
 - Audit Checks.
 - Exporting and Importing Clash Tests.
 - Method for Testing and Resolving Clashes.
- 4D TIME MODEL; TIMELINER:
- TimeLiner Overview.
 - Creating Tasks.
 - Gantt View.
 - Import Tasks from External Project File.
 - Configuring and Defining a Simulation.
 - Simulation Export.
- QUANTIFICATION:
- Quantification Overview.
 - Setting up a Quantification Project.
 - Item and Resource Management.
 - 3D Model and Virtual take-off.
 - Managing take-off Data.
 - 2D Take-offs.
 - Analysing Changes.
 - Exporting Take-off Data.
- AUTODESK RENDERING:
- Autodesk Rendering Overview.
 - Adding Materials to a Model.
 - Creating and Editing Materials.
 - Material Mapping.
 - Lighting.
 - Sun and Sky Lights.
 - Exposure Control.
 - Ground Planes.
 - Photorealistic Rendering.
- J. 5D:COST ESTIMATION:
- Manual Estimation: Corresponding to Material take-offs.
 - With the help of quantification of Navisworks and Revit software.
 - Value Engineering.
 - 4D-5D Simulation: Real time conceptual modelling and cost planning.
- K. 6D: ENERGY MODEL:
- Lighting analysis.
 - Solar analysis.
 - Heating & cooling analysis.

- Energy analysis.
- Revit Insight Integration.

L. 7D: FACILITY MANAGAEMENT:

- Create life-cycle BIM Strategies.
- Documentation and manage the life-cycle.
- BIM Embedded Q&M Manuals; CPIX Assessments.
- BIM Maintenance Plans and Technical Support.
- COBie_UK_2012 Compliances and Excel Sheet.

M. PROJECT MANAGEMENT SOFTWARE-BAR CHART, ESTIMATION & COSTING USING DIFFERENT TECHNOLOGIES.

➤ MICROSOFT PROJECT

- Work Breakdown Structure (WBS) and its rules.
- Scheduling a project plan.
- Configuring project management software.
- Managing project resources.
- Establishing project baselines for performance.
- Planning & controlling the project.
- Use of BIM & excel in estimation & costing.
- Rate analysis, DSR its application for tendering.
- Estimation thumb rules & through BBS.
- Estimated and projected costing.
- Investment vs. Rate of return Ratio (IRR).
- Profitability vs. Investment Charts.
- Critical Path Methods and Project Evaluation & Review Technique.
- Comparison between CPM and PERT.