Faculty of Engineering and Technology
Department of Civil Engineering
Minor Degree in Building Information Modeling
Effective in Academic Year 2025-26

Branch Name:	Civil Engineering
Semester:	V
Course Code:	BIM501
Course Name:	BIM Modeling and Documentation in Revit (Detailed Level)
Pre-requisite Course:	Autodesk Revit Software Basic level, CAD

Course Objective

- This course aims to equip students with the knowledge and skills required to create and manage BIM models using Autodesk Revit.
- Emphasis is given to Architecture & structural components, detailing, Drawing creations, and documentation as per industry standards.

Teaching Scheme (hours)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
2	--	6	5	30	20	50	50	150

Sr. No	Topic	Teaching Hrs.	Module Weightage
1	**Module 1: Introduction to Advance Tools in Revit** Site Elements, Collaborate Tools, Detailed Annotation System, Curtain System, Project Management Tools, Model Grouping, Link Files, Materials	04	10
2	**Module 2: Revit Family's & Parameters** Model-in-Place, System Family Modification, Custom Families, Parametric Family, Project Parameters, Shared Parameter, Global parameter, Family Parameter	06	10
3	**Module 3: Detailed Building Modeling** Modeling Stack walls, Curtain Walls, Store Front, Metal Deck, Beam System, Truss System, Steel Structure, Finish floor, Slope Floor, Floor and Slab Openings, Stair & Railing, Ramp, Ceilings, Doors, Windows Modeling with Opening, and Components	12	20
4	**Module 4: Coordination & Model Health Check** Linking and Collaborating with Other Trade models (Mechanical, Electrical Structure, Landscape, Architecture), Clash Detection, Warnings, Model Quality Checks	12	15
5	**Module 5: Detail Drawings & Annotations** Creating Drawings: Plans, Sections, Elevations, 3D Views, Crop View, Callout, Drafting View, Area Plan, Detailed Annotations: Annotation family, keynote system, Detail Items, View Region, Plan Region, Revisions Cloud, Repeating Components, Tags, and Notes.	12	20
6	**Module 6: Case Studies and Detailed Project** Industry Case Studies on Detailed BIM projects, Hands-on Project: Residential or Commercial Building Model, Project Presentation and Documentation	12	25

Course Outcome

At the end of this course, the student will be able to

1. Understand the Revit interface and BIM workflow.
2. Revit Content Library & Parameter Concept in BIM.
3. Accurate Architecture & Structure discipline BIM Modeling.
4. Generate Detailed drawings and Proper Annotation.
5. Coordinate with other disciplines using Revit's collaboration tools.

Scope of Course

- Useful for careers in structural design, BIM coordination, detailing, and project documentation.
- Prepares students for roles in consulting firms and construction companies using BIM workflows.
- Serves as a foundation for advanced topics like 4D (Time), 5D (Cost) BIM, and Structural Analysis Integration.
- Enhances eligibility for Autodesk Certified Professional (ACP).

Suggested Practical's

Module 1: Introduction to Advanced Tools in Revit

1. Create site elements (topography, pads, and landscaping).
2. Use collaboration tools to set up a multi-user Revit project.
3. Apply materials to elements and explore rendering outputs.
4. Model curtain wall systems and manage model grouping/linking.

Module 2: Revit Families & Parameters

5. Create a custom parametric door/window family with constraints.
6. Modify system families (walls, floors, roofs) with unique parameters.
7. Work with shared and global parameters across a project.
8. Develop a model-in-place family for a custom building component.

Module 3: Detailed Building Modeling

9. Model curtain walls, storefronts, and stack walls with openings.
10. Create a structural system: beams, trusses, and metal deck.
11. Add staircases, railings, ramps, and ceilings.
12. Design openings in slabs and walls with detailed components.

Module 4: Coordination & Model Health Check

13. Link structural and architectural Revit models together.
14. Perform clash detection using Revit's coordination review.
15. Run model health checks (warnings, file size, worksets).
16. Prepare a coordination report summarizing conflicts and resolutions.

Module 5: Detail Drawings & Annotations

17. Generate detailed construction drawings (plans, sections, elevations, 3D).

18. Create drafting views, callouts, and area plans.
19. Add annotations: tags, keynotes, repeating details, and revision clouds.
20. Prepare final sheets with title blocks for printing and presentation.

Module 6: Case Studies & Detailed Project

21. Review an industry BIM case study and prepare a presentation.
22. Develop a detailed residential/commercial BIM model (architecture + structure).
23. Produce full project documentation: drawings, schedules, and 3D views.
24. Present final project with coordinated models and documentation.