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3019	2025	ARC-3019	1/2025	00	Architecture

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المكتب الهندسي لخدمات التكنولوجيا و البرمجيات

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🏗️ **Building Information Modeling (BIM) Using Revit**

Course Code: 3019-ARC

📙 **Introduction**

Building Information Modeling (BIM) is revolutionizing the architecture, engineering, and construction (AEC) industry. This course introduces participants to the principles and practices of BIM using **Autodesk Revit**, the industry-leading software for architectural

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design and documentation. You will learn how to create intelligent 3D models that contain real-world information, enabling better design decisions, collaboration, and project outcomes.

❇️ Course Description

This hands-on course provides an in-depth understanding of Building Information Modeling (BIM) with a focus on Autodesk Revit. It covers everything from BIM fundamentals to advanced techniques in digital modeling, interdisciplinary coordination, documentation, and energy analysis. Learners will gain practical experience in creating smart 3D models and managing integrated design workflows across architectural, structural, and MEP disciplines.

🎯 Course Objectives

- Understand the philosophy and workflow of BIM in modern construction.

- Master Autodesk Revit as a BIM tool for architectural modeling.

- Apply BIM for cross-disciplinary coordination and clash detection.

- Use Revit for construction documentation, quantity take-offs, and performance analysis.

- Develop a complete BIM-based design project from start to finish.

📒 Course Modules

Module 1: Introduction to BIM

- What is BIM? Evolution from CAD to BIM

- Advantages of BIM for architecture, engineering, and construction

- BIM Level of Detail (LOD) and Information (LOI)

- Industry standards (ISO 19650, IFC, COBie)

Module 2: Getting Started with Revit

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- Revit interface and workspace navigation

- Project setup: units, levels, grids, and templates

- Creating and modifying basic building components (walls, floors, roofs, doors, windows)

- Understanding families and parametric components

Module 3: Architectural Modeling

- 3D modeling of architectural elements

- Stairs, railings, curtain walls, and custom families

- Creating and managing views: floor plans, sections, elevations, and 3D views

- Annotations, dimensions, and detailing

Module 4: Documentation & Schedules

- Construction documentation workflow

- Creating sheets and layouts

- Material takeoffs and quantity schedules

- Phase management and worksets

Module 5: Coordination with Other Disciplines

- Linking architectural, structural, and MEP models

- Clash detection and interference checking

- Collaboration using Revit Worksharing and BIM 360

- Exporting to Navisworks for review and coordination

Module 6: Analysis and Simulation

- Sun path and shadow studies

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- Daylight analysis and solar exposure

- Energy modeling and performance simulations

- Integrating Revit with tools like Insight 360 and Green Building Studio

Module 7: BIM Standards & Workflow Integration

- Working with BIM Execution Plans (BEP)

- Setting up shared parameters and project standards

- Exporting to IFC for interoperability

- Model auditing and file management best practices

Module 8: Final Project

- Full BIM model of a residential or commercial building

- Includes architectural layout, annotations, schedules, and sheets

- Cross-discipline coordination

- Presentation and peer review

📦 Learning Outcomes

By the end of this course, participants will be able to:

- Build and manage comprehensive 3D architectural models using Revit.

- Produce complete and professional construction documentation.

- Collaborate with other disciplines in a coordinated BIM environment.

- Conduct basic building performance analysis.

- Apply BIM workflows for real-world architectural and construction projects.

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🧑‍🏫 Instructions & Requirements

- **Prerequisites**: Basic knowledge of architecture or civil engineering concepts; familiarity with 2D drafting is helpful but not mandatory.

- **Software Required**: Autodesk Revit (preferably 2023 or newer); optional access to Navisworks and Insight.

- **Delivery Format**: In-person or online with video lectures, assignments, and live project reviews.

- **Evaluation**: Weekly assignments, quizzes, and a final BIM project submission.

👨‍🎓 Target Audience

- Architecture and civil engineering students

- Junior architects and BIM coordinators

- Professionals looking to transition from CAD to BIM-based workflows

🎓 What You Will Learn

By the end of the course, you will:

- Understand the concepts and benefits of BIM in construction projects

- Navigate the Revit interface and create architectural components (walls, roofs, doors, etc.)

- Develop complete building models with documentation and details

- Create schedules, quantity take-offs, and construction sheets

- Collaborate with other disciplines (structural, MEP) using linked models

- Conduct energy and performance analysis of building designs

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- Apply industry standards for BIM data exchange and interoperability

- Deliver a final professional-grade BIM project using Revit

🕐 Time Frame

- **Total Duration**: 8 to 10 weeks

- **Weekly Commitment**: 6–8 hours/week

    o 2 hours theory (video or live sessions)

    o 2–3 hours hands-on Revit practice

    o 2–3 hours assignments and project work

- **Capstone Project**: Final two weeks dedicated to a full design project

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👨‍💻 Format

- **Delivery Mode**:

    o **Online (Live + Recorded Sessions)**

    o Or **On-site (Instructor-led classroom training)**

- **Materials Provided**:

    o Step-by-step tutorials

    o Revit project files and templates

    o Quizzes and checklists

    o Access to a private support group or forum

- **Tools Needed**:

    o Autodesk Revit (2023 or newer)

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- o   Optional: Navisworks, Insight 360 for advanced users

- **Assessment**:

  - o   Weekly practical tasks

  - o   Mid-course review

  - o   Final project submission and peer/instructor evaluation

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