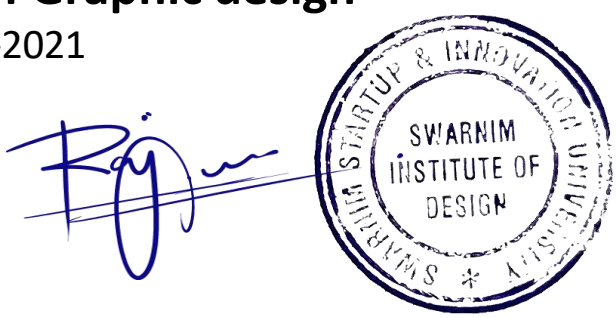
SWARRNIM
SCHOOL OF DESIGN

VALUE ADDED COURSE

Swarrnim Institute of Design

Branch: Bachelor of Graphic design

YEAR: 2020-2021



SWARRNIM
STARTUP & INNOVATION
UNIVERSITY
WHERE IDEAS COME ALIVE.

Bhoyan Rathod, Opposite IFFCO, Near ONGC WSS, Adalaj
Kalol Highway, Gandhinagar, Gujarat - 382422.

Course Title: Advanced building information modelling (BIM)

Course Code:VACABIM

PROGRAMME:	Bachelors of Graphic design	Branch:	All

Hours: 30 hrs

Target Audience:

- Architecture, Engineering, and Construction (AEC) professionals
- Graduate students in architecture, civil engineering, and construction management
- Practicing architects, engineers, contractors, and project managers
- BIM coordinators and managers
- Individuals with basic knowledge of BIM who want to expand their expertise

Course Overview:

This course is designed to provide advanced knowledge and practical skills in Building Information Modeling (BIM). It focuses on the application of BIM tools and techniques in the lifecycle of a building project, emphasizing collaboration, project coordination, clash detection, and real-time simulation for better project outcomes. Participants will learn how to leverage BIM for multidisciplinary integration and design optimization using industry-standard software.

Learning Objectives:

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

1. Understand the advanced concepts of BIM and its integration into the AEC industry.
2. Utilize BIM for project coordination, clash detection, and problem-solving.
3. Collaborate effectively across disciplines using BIM models.
4. Create detailed and highly accurate 3D models for project planning, design, and construction phases.
5. Implement BIM for facility management and operations.
6. Understand legal and contractual implications of BIM in project delivery.
7. Simulate real-time scenarios for project optimization.

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Course outline		
Sr. No	**Content**	**Total hours**
1.	**Module 1: Introduction to Advanced BIM Concepts** • Overview of BIM fundamentals and advanced applications • BIM standards and protocols (e.g., ISO 19650) • BIM Level 2 and Level 3 • Legal aspects and contractual requirements in BIM • Role of BIM in the lifecycle of a building (Design, Construction, and Facility Management)	04
2.	**Module 2: BIM for Design and Multidisciplinary Coordination** • Developing a 3D parametric model using BIM software (e.g., Autodesk Revit, ArchiCAD) • Integrating architectural, structural, and MEP (Mechanical, Electrical, Plumbing) models • Coordination techniques across various disciplines • Clash detection and resolution (using tools like Navisworks) • Advanced use of collaborative platforms (e.g., BIM 360, Trimble Connect)	06
3.	**Module 3: BIM for Project Management and Construction** • Using BIM for project scheduling (4D BIM) • Cost estimation and quantity takeoff (5D BIM) • BIM-based site planning and logistics • Project tracking and progress monitoring • Risk management through simulation and predictive analysis	06

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Course outline		
Sr. No	**Content**	**Total hours**
4.	**Module 4: BIM for Sustainability and Performance Analysis** • Using BIM for energy analysis and environmental performance (e.g., Green Building Studio, Ecotect) • BIM in sustainable design and construction • Analyzing and optimizing building performance using BIM • Integration of BIM with environmental certification standards (LEED, BREEAM)	04
5.	**Module 5: BIM for Facility Management and Operations** • Role of BIM in facility management and operations (6D BIM) • Integration of BIM with FM software (e.g., IBM Maximo, Archibus) • Managing building maintenance and lifecycle using BIM • Case studies on BIM for post-construction operations	04
6.	**Module 6: Future Trends and Innovations in BIM** • BIM and Internet of Things (IoT) integration • Use of AI and machine learning in BIM • BIM for smart cities and infrastructure development • Virtual Reality (VR) and Augmented Reality (AR) in BIM applications • Future of BIM in digital construction	03

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Teaching Methodology:

•Lectures: Interactive sessions covering theoretical and practical aspects of BIM.

•Hands-on Practical Sessions: Real-life BIM project development using industry-standard software like Autodesk Revit, Navisworks, and BIM 360.

•Group Projects: Collaborative assignments for multidisciplinary BIM model creation and clash detection.

•Case Studies: Review of successful BIM implementation in real-world projects.

•Guest Lectures: Industry professionals sharing insights on advanced BIM practices.

Assessment & Certification:

- Continuous evaluation through practical assignments and project submissions.
- Final project presentation involving an advanced BIM model.
- Upon successful completion of the course, participants will receive a certificate in Advanced Building Information Modeling (BIM).

Outcomes:

Participants will leave this course with the ability to work on complex BIM projects, manage multidisciplinary coordination, and use BIM as a decision-making tool in the design, construction, and management of buildings and infrastructure. They will also gain insight into emerging technologies that are shaping the future of BIM.

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