GUJARAT TECHNOLOGICAL UNIVERSITY
Programme Name: Minor/Hons. Program
Level: UG
Branch: Minor/Hons. Computer Aided Civil Engineering Processes
Branch: Civil Engineering
Code: BE050AV011
Subject: Name: Advances in Planning - Software Applications

w.e.f. Academic Year:	2026-27
Semester:	5
Category of the Course:	Compulsory

Prerequisite:	Basics of Planning, Knowledge of 2D Drafting
Rationale:	The subject help to build the thinking process of students to develop 3 three-dimensional views of buildings by using various subjects.

Teaching and Examination Scheme:

Teaching Scheme					Total Credits = TH/30	Assessment Pattern and Marks					Total Marks
						Theory Marks		Practical Marks			
L	T	P	PBL*	TH		ESE (E)	PA (M)	PA (I)	PBL (I)	ESE (v)	
30	0	60	30	120	04	70	00	00	30	50	50

Content:

Sr. No.	Content	Total Hrs.
1	**Introduction:** Conversion of 2D plan into 3D, Introduction to the software used for 3D Modelling, Advantages and Disadvantages of various software available for 3D Modelling.	02
2	**3D Modelling using AutoCAD.** Basic 3D modelling, Advanced 3D Modelling by using AutoCAD.	08
3	**3D Modelling using Google SketchUp** Introduction and Installation of Google SketchUp, 3D modelling by using basic to advance command of Google SketchUp.	08
4	**Revit: - Drafting and Modelling Software** Planning of a residential site by using basic commands of Revit, introduce with the layers available and working space creation in Revit.	10

	Preparation of Section and exterior views of the residential site. 3D Modelling in Revit Architectural software.	
5	**Governance:** E-Governance, Structure of governance and strategies, Planning and Implementation, Civic Engagement, Security & Safety.	02

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10%	**15%**	**25%**	**20%**	**10%**	**20%**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Architectural Design with SketchUp: 3D Modeling, Extensions, BIM, Rendering, Making, and Scripting (2nd Edition) by Wiley Publication.
2. Autodesk Revit 2023 Architecture Certified Professional Exam Study Guide: Text and Practice Exam (e book)
3. Introduction to Google SketchUp, 2nd edition by Aidan Chopra, Laura Town, Chris Pichereau
4. Autodesk Revit 2024 Black Book by Gaurav Verma, Published by Matt Weber.

Course Outcomes:

No.	Course Outcomes	Marks % weightage
CO1	Students will be able to learn advanced use of AutoCAD Software	30%
CO2	Students will be able to learn basic to advance use of Google SketchUp	25%

CO3	Students will be able to learn basic use of Revit.	45%

List of Experiments:

1. Using AutoCAD Prepare 3D Model of various residential and commercial buildings (Minimum 5)
2. Using Google SketchUp prepares 3D model of various buildings (Minimum
3. Prepare Plan, section, and elevation of residential bungalow by using Revit (Minimum 4)
4. Create 3D model by using Revit. (Minimum 4)

List of suggested activities for Problem Based Learning:

Following are the list of self-learning activities under PBL Component which will be assessed by faculty members at the institute level. Institutes need to maintain the records for the same.

SN	Name of the Activity	No. of Hours	Evaluation Criteria
1	3D Modelling Practice (AutoCAD / SketchUp / Revit) – Creation of a Residential 3D Model	10 Hours	Accuracy & completeness of 3D model (30%), Use of basic & advanced commands (30%), Quality of 3D/sectional views (20%), Report with screenshots & explanation (20%)
2	Comparative Study of 3D Modelling Software (AutoCAD, SketchUp, Revit)	10 Hours	Depth of software analysis (40%), Technical clarity & correctness (30%), Presentation/report quality (20%), Use of references and examples (10%)
3	Case Study on E-Governance Platform (Digital India / UMANG / Municipal e-Services etc.)	10 Hours	Understanding of governance structure (30%), Analysis of services, implementation & benefits (30%), Quality of diagrams/screenshots (20%), Report formatting & clarity (20%)

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