Gyanmanjari
Innovative University

Subject: Architecture 3D Modelling – BETCV13203

Type of course: Skill Enhancement Course (SEC)

Prerequisite: CAD- Computer Aided Design-1, CAD- Computer Aided Design-2

Rationale:

This course provides students with comprehensive knowledge and practical skills in 3D architectural modeling, focusing on both theoretical concepts and hands-on applications. Students will learn the principles of architectural design and representation, as well as the use of digital tools and software for creating accurate and visually compelling 3D models. Through a series tutorial, and projects, students will explore various techniques and workflows used in the architectural modeling process, from conceptualization to presentation.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
00	00	04	02	00	00	10	40	50	100

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Course Content:

Sr. No	Course content	Hrs	% Weightage
1	**Introduction to 3D Modelling Software** Basic of 3D Modelling Software, Basic Introduction of AutoCAD 3D, Basic Introduction of 3Ds Max, Basic Introduction of Sketch Up.	08	10
2	**Introduction to CAD 3D** Demonstrate the basics of CAD software and its important commands, Prepare a simple building drawing file using basic draw and modify commands.	10	15
3	**Introduction to SketchUp 3D** Introduction of SketchUp, Use of Sketch-Up, tool used in SketchUp and Advantage of sketch up over Auto Cad 3D	12	25

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4	**Demonstration of 3D Commands in AutoCAD** Explain the applications of Edit commands, modify existing CAD drawing, apply advance command for edit/modification of drawing, Prepare typical Drawings using Different Layer, develop final Drawings with using View Command.	15	25
5	**Demonstration of 3D Commands in SketchUp** SketchUp Interface and Customize Toolbars, Manipulate Objects and Draw with Tools, Modal Form Floor Plan, Organize Models with Tags, Groups, Components and Outliner Window, Apply and Edit Materials With a Import and Manage Textures, Document Design With a Scenes, Tiles, Shadow, Fog And section cut.	15	25

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
01	Faculty will give the one room dimension and student will Draw a 3D simple plan of a rectangular room – 3D Modelling in AutoCAD. After that student will upload on GMIU Web Portal.	15
02	Faculty will assign to draw a 3D Architecture Modelling of 2-BHK house In Sketchup. And upload on GMIU Wen Portal.	15
03	Faculty will assign bungalow plan to student, make 3D modelling in AutoCAD and upload on GMIU Web Portal.	10
04	Faculty will assign to make comparative presentation on AutoCAD 3D and Sketch-up 3D. And upload on GMIU Web Portal.	10
	Total	**50**

Suggested Specification table with Marks (Theory): NA

Distribution of Theory Marks (Revised Bloom's Taxonomy)					
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	NA	NA	NA	NA	NA	NA

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.

Course Outcome:

After learning the course the students should be able to:	
CO1	Application of 3D Modelling Software.

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CO2	Understand 3D CAD Components and its Applications.
CO3	Develop Professional Skill In 3D Drawing, Drafting and Animation By Using SketchUP.
CO4	Learn 3D Modelling Workspace into 3D Solids
CO5	By Using Basic Shape Add Perspective Use Shading and Add Details.

List of Practical

Sr. No	Descriptions	Unit No	Hrs
1	Launch AutoCAD 3D and explore its interface, including the workspace layout and tool palettes.	2	02
2	Create a basic 3D object such as a cube or cylinder using AutoCAD's primitive shape commands.	2	02
3	Apply basic rendering settings to the 3D object in AutoCAD to visualize its appearance.	4	02
4	Navigate through the AutoCAD 3D workspace using various viewports and navigation tools.	4	02
5	Experiment with basic modeling tools in 3Ds Max, such as extrusion, bevel, and chamfer.	1	02
6	Create a simple 3D scene in 3Ds Max by arranging and positioning primitive objects.	1	02
7	Apply materials to the objects in 3Ds Max to add realism to the scene.	1	02
8	Launch SketchUp and familiarize yourself with its interface, including the toolbar and drawing area.	3	02
9	Draw a basic 3D shape, such as a house or a chair, using SketchUp's drawing tools.	3	02
10	Use SketchUp's push-pull tool to extrude surfaces and create three-dimensional objects.	3	02
11	Group related objects together in SketchUp to organize the model's structure.	3	02
12	Apply textures and materials to surfaces in SketchUp to enhance the appearance of the model.	5	02
13	Create scenes in SketchUp to capture different viewpoints or perspectives of the model.	5	02
14	Experiment with SketchUp's shadow settings to adjust the lighting and shadow effects in the scene.	5	02
15	Use SketchUp's section cut tool to create cross-sectional views of the model for better visualization.	5	02
		Total	**30**

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Software Learning Websites/ Reference Books:

[1] **AutoCAD, 3Ds Max, Sketch Up**

[2] https://www.autodesk.com/education/edusoftware/overview?sorting=featured&filters=individual

[3] www.Autodesk.com

[4] https://ifsacademy.org/autodesk-3ds-max-online-training#:~:text=Our%20Autodesk%203DS%20Max%20online,industrial%20working%20professionals%20and%20Autodesk.

[5] https://learn.sketchup.com/