Course Syllabus
Gyanmanjari Institute of Technology
Semester-1

Subject : CAD-Computer Aided Design -1 (BTECV11201)

Type of course: Skill Enhancement Courses (SEC)

Prerequisite: Basic knowledge of Computer

Rationale: Computer Aided Design is invariably used for Civil Engineering Drawing and visual representation before actual construction. With advancement in Building Technology, new features have been introduced in structures. Further structural design has also been modernized. This has further increased the importance of drawing and drafting software's which help in visualizing the structures thus increasing the understanding. Besides technological development in drafting software's have made them more user friendly thus making them virtually indispensable. Hence knowledge of Computer Aided Drafting has become even more important skill than before. Civil Engineering Drawing, the language of a Civil Engineer helps him in efficiently representing engineering details like plan, elevation, section, foundation, building elements, etc. for easy understanding of the clients, authorities, etc. Computer Aided Drafting (CA Drafting) helps in easily performing the above task and drastically reducing the time of preparation of the drawings.

Computer Aided Drafting tools like AUTOCAD, REVIT, SKETCHUP have made civil engineering drawing simple, easy to represent details and time saving.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
				Theory Marks		Practical Marks		CA	
CI	T	P	C	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	% Weightage
1	**Introduction to CAD** • Demonstrate the basics of CAD software and its important commands. • Prepare a simple building drawing file using basic draw and modify commands.	12
2	**Demonstration of 2D in Commands** • 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 Dimension, Text and Hatching tools.	24
3	**Introduction to REVIT** • Explain basics of Revit, demonstrate components of REVIT UI, prepare simple building drawing using REVIT, Demonstrate Rendering in REVIT and Calculate data from REVIT	10
4	**An Introduction to BIM** • What is BIM? • Why BIM? • Benefits of BIM, • Challenges of BIM, Information Management, • Understanding RERA, Concepts of Smart homes & Smart Cities, • Impact of BIM on the AEC Industry and Career Opportunities in BIM.	10
5	**Introduction to SketchUp 3D** • Introduction of SketchUp, Use of SketchUp, • Tool used in SketchUp and Advantage of sketch up over Auto Cad 3D	24

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	**Draw a Plan** Student will draw a simple plan of a rectangular room or layout of given dimensions – 2 drawings. And upload on GMIU web portal.	10
2	**Draw a Plan** Student will Draw a diagram of a plan of two BHK house. And upload on GMIU Web Portal.	10
3	**BIM Model:** Student will prepare the BIM model of 2nd ALA. And upload on GMIU Web Portal.	10

4	**REVIT Model:** Every student will prepare own house model in REVIT which is prepare in ALA. And upload on GMIU Wen Portal.	10
5	**Poster Making:** Student will prepare poster on various software using in Civil Engineering. 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	Prepare basics drawing by using AutoCAD Command.
CO2	Prepare 2D drawings of building components like beam, slab, column and footing residential &commercial building using CAD.
CO3	Prepare 2D drawings like Plan, Elevation and Sectional of residential &commercial building using CAD.
CO4	Understanding BIM.
CO5	Prepare simple building drawing using REVIT.

List of Practical

Sr. No	Descriptions	Unit No	Hrs
1	• Understanding the interface and tools of AutoCAD, including how to navigate the various views and panels, create and modify objects, and work with layers and blocks. • Understanding how to create a basic AutoCAD drawing, including creating lines, circles, arcs, rectangles, and other objects.	1	10

2	• Understanding how to use AutoCAD for collaboration and sharing, including how to import and export files, work with other team members, and use cloud collaboration tools like Autodesk Drive. • Understanding the role of AutoCAD in various industries, including architecture, engineering, manufacturing, and construction.	2	16
3	• Understanding how to create and edit views in Revit, including 2D and 3D views, schedules, and sections. • Understanding the role of Revit in various stages of a project, including design, construction, and operation.	3	14
4	• Understanding how to create a BIM model and the various components that make up the model, including geometry, attributes, and relationships. • Understanding how to manage and share BIM data, including file formats and data exchange standards. • Understanding the role of BIM in various stages of a project, including design, construction, and operation	4	08
5	• Understanding the basic concepts and principles of SketchUp, such as the use of 3D modelling to create digital models of buildings, structures, and objects. • Understanding the interface and tools of SketchUp, including how to navigate the various views and panels, create and modify objects, and work with layers and groups.	5	12
		Total	60

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, REVIT

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

[3] https://old.aicte-india.org/bfreedownloadsadesk.php

[4] www.Autodesk.com

[5] https://www.thesourcecad.com/autocad-tutorials/