Gyanmanjari Innovative University

Course Syllabus
Gyanmanjari Diploma Engineering College
Semester - 3

Subject: CAD - Computer Aided Design – DETCV13111
Type of course: Engineering Science
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 importanceof 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 moreimportant 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, SKETCH-UP 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- ActiveLearning Activities.

Course Content:

Sr. No	Course content	Hrs	% 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.	16	25

2	**Demonstration of 2D in Commands** Explain the applications of Edit commands, modify existing CADDrawing. Apply advance command for edit /modification of drawing Prepare typical Drawings using Different Layer. Develop final Drawings with using Dimension, Text and Hatching tools.	20	25
3	**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 inBIM.	10	25
4	**Introduction to Sketch Up 3D** Introduction of Sketch Up, Use of Sketch Up, Tool used in Sketch Up and Advantage of sketch up over AutoCad 3D	14	25
	Total	**60**	**100**

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
01	**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
02	**Draw a Plan** Student will Draw a diagram of a plan of 2-BHK house. And upload on GMIU Web Portal	15
03	**BIM Model** Student will prepare the BIM model of 2nd ALA. And upload on GMIU Web Portal.	15
04	**Report Preparation** Student will prepare the comparison report on AutoCAD and BIM software. 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 and modeling by Sketch-Up.

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	15
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	15
3	• 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	3	15
4	• 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.	4	15
		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
[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/