Gyanmanjari Innovative University

Course Syllabus
Gyanmanjari Institute of Technology
Semester-2 (B.Tech)

Subject: CAD- Computer Aided Design - 2 (BETCV12202)

Type of course: Skill Enhancement Courses (SEC)

Prerequisite: - Basic knowledge of Computer Aided Design

Rationale: Computer Aided Design is invariably used for Civil Engineering Drawing and visual presentation 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-ClassRoomInstrctions; T–Tutorial; P-Practical; C–Credit; ESE-EndSemesterExamination; MSE-MidSemesterExamination; V–Viva; CA-ContinuousAssessment; ALA-ActiveLearningActivities

Course Content:

Sr. No	Course content	% Weightage
1.	**Introduction to detail CAD drawing** • Demonstrate the different types of command in CAD drawing which are used for detail drawing like hatch, super hatch, dimension, and P-line etc. • Prepare a detail drawing of building drawing file by using draw and modify commands.	17

2.	**Prepare Detailed Drawing of Electrical and plumbing plan** • 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 Electrical and Plumbing Drawings with using Dimension, Text and Hatching tools.	15
3.	**Detailed Drawing of Structural plan** • Apply advance command for edit/modification of drawing • Prepare typical Drawings using Different Layer. • Develop final structural Drawings with using Dimension, Text and Hatching tools.	15
4.	**Detailed Drawing of Corporation drawing** • Apply advance command for edit/modification of drawing • Prepare typical Drawings using Different Layer. • Develop final Corporation Drawings with using Dimension, Text and Hatching tools.	40
5.	**Introduction to Structure Design Software** • Introduction to advanced structure design software which are helpful to multistory building structure design. Software like STAAD PRO, E-TAB, SAP-2000, SAFE and MIDAS/GEN.	13

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
01	**Plan** Faculty will give the dimension for Drawing a plan. Student have to draw a plan as per the dimensions given in AutoCAD and upload on GMIU Web Portal.	10
02	**Elevation** Students have to Draw a elevation & section of above problem and upload it on GMIU Web Portal.	10
03	**Detail Drawing :** Faculty will assign the plan to individual student and students have to draw with all details like Electric, plumbing, and Water layout plan. And upload on GMIU Web Portal.	10
04	**Blocks and Attributes:** Student will Create a block library with common architectural symbols and Utilize attributes within blocks for dynamic information. After that student will upload the activity on GMIU Web Portal.	10
05	**Layer Management** Student will demonstrate the 3rd ALA in the form of layer creation and manipulation, assign different colors and line types to layer and create drawing with well organized layer. After that student upload the activity 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 be varies lightly from above table.

Course Outcome:

After learning the course, the students should be able to:	
CO1	Gain a proficient understanding of drawing tools and techniques in CAD, enabling them to create 2D drawings of building components such as beams, slabs, columns, and footings for both residential and commercial structures.
CO2	Acquire a comprehensive understanding of electrification and plumbing components in both residential and commercial buildings. They will demonstrate the ability to draw detailed electrification and plumbing plans using CAD tools.
CO3	Understand the structural components of buildings. They will demonstrate the capability to create detailed structural drawings of buildings using CAD tools.
CO4	Understand the rules and regulations governing building construction. They will showcase the ability to draw accurate corporation drawings of buildings in compliance with relevant standards and regulations using CAD tools.
CO5	Understand different types of software used in structural design.

List of Practical

Sr. No	Descriptions	Unit No	Hr.
01	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
02	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.	4	12

03	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. Draw a layout plan.	4	12
04	Draw Detailed plan of electrical Drawing	2	9
05	Draw Detailed plan of Plumbing Drawing	3	9
06	Understanding the basic concepts and principles of STAAD pro. Understanding the interface and tools of STAAD pro, including how to navigate the various views and panels, create and modify objects, and work with layers and groups.	5	08
	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 blackboard, may also use any of tools such as demonstration, role play, Quiz, brain storming, 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.

Reference Books (with Software Learning Websites):

[1] Auto CAD,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/