



Course Syllabus  
Gyanmanjari Institute of Technology  
Semester- 3

**Subject:** Parametric Modeling -BETME13204

**Type of course:** Skill Enhancement Course

**Prerequisite:** Engineering Drawing, Mechanical Drafting, AutoCAD

**Rationale:** The main objective of this course is to develop the skills regarding various modeling and digital production drawings as required by the industry using appropriate CAD software.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P		Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
-	-	4	2	-	-	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	<b>Fundamentals of AutoCAD</b> computer configuration, coordinate system, AutoCAD programme window, basic information of AutoCAD software.	8	14%
2	<b>Application of AutoCAD Commands</b> Basic 2D commands-Line, Circle, Arc, Rectangle, Polyline, Polygon, Array, etc. 2D Modify/Edit commands- Erase, Copy, Move, Offset, Mirror, Trim, Rotate, Extend, Chamfer, Fillet, Scale, etc. Drafting setting commands- Grid, Snap, Polar tracking, OSnap, Ortho, Dynamic input, Units, etc. 3D primitives- Box/Cube, Cylinder, Cone, Pyramid, Wedge, Torus 3D commands- Revolve, Sweep, Loft, Press pull, Extrude, etc. 3D Modify- 3D Array, 3D Mirror, 3D Rotate, Union, Subtract,	16	18%





	Intersect, etc.		
3	<b>2D Drafting using AutoCAD</b> Basic 2D drafting of mechanical components, Dimensioning of drafting models, basic understanding of industrial drawing.	14	22%
4	<b>3D Modeling-1 using AutoCAD</b> 3D modeling from 2D drafting, 3D modeling from 3D commands and 3D Primitives	12	24%
5	<b>3D Modeling-2 using AutoCAD</b> 3D modeling by Parametric Modeling Software like, NX, SolidWorks, Creo	10	22%

**Continuous Assessment:**

Sr. No	Active Learning Activities	Marks
1	<b>2D Drafting</b> Design a 2D drawing of mechanical machine component using design software method and upload file on GMIU web portal	10
2	<b>3D Model</b> Prepare a 3D model of machine components, (Faculty will assign the problem) upload file on GMIU web portal	10
3	<b>Assembly</b> Create the Assembly model. (Faculty will assign the assembly problem) upload file on GMIU web portal	30
Total		50

**Suggested Specification table with Marks (Theory):**

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	Describe fundamentals regarding computer-aided design and drafting
CO2	Prepare the 2D drawing of given component by using AutoCAD.
CO3	Sketch Isometric drawing using isometric tools from given 2D drawing in AutoCAD.
CO4	Practice a 3D Model of given 2D drawing using AutoCAD.
CO5	Compile a 3D Model of given object using Creo

**List of Practical:**

Sr. No	Descriptions	Unit No	Hrs
1	Basic 2D Drawing using AutoCAD	2	4
2	Advance 2D Drawing using AutoCAD	2	6
3	Basic Isometric Drawing using AutoCAD	2	6
4	Basic 3D Solid Modeling using AutoCAD	3	8
5	Advance 3D Solid Modeling using AutoCAD	3	8
6	Sketch 2D drawings with dimensions and constraints using any one parametric modeling software	2	8
7	Prepare 2D orthographic production drawing using AutoCAD	2	6
8	Indicate various tolerance and drafting symbols in 2D drafting	2	4
9	Prepare 3D orthographic production drawing using AutoCAD	4	6
10	Indicate various tolerance and drafting symbols in 3D Modeling	4	4
	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.

**Reference Books:**

- [1] AutoCAD for engineers and Designers By Sham Tickoo | Dreamtech press
- [2] Machine drawing including AutoCAD By Ajeet singh | McGraw-hill
- [3] AutoCAD 2021 Instructor By James A. Leach, Shawna Lockhart | SDC Publications

