Syllabus for Diploma Engineering

Automobile Engineering

Semester – V

Subject Name: Automotive CAD Practice

Subject Code: 09AE0505

Diploma branch in which subject is offered: - Automobile Engineering

Objective: The objective is to teach the students the commands necessary for professional 3D CAD drawing, design, and drafting using professional CAD tool. The knowledge of CAD knowledge is important for lot of job opportunity and services basis of CAM.

Credits Earned: 1

Course Outcomes:

After learning the course, the students should be able to:

- learn how to create 2D sketches using commands such as lines, circles, arcs, rectangles etc.
- learn how to apply manual and automatic constraints to sketches.
- learn how to edit, move, copy, sketches.
- create 3D models and shapes using commands such as extrude, revolve, sweep, blend, sweep blend, draft, fillet, chamfer etc.
- learn how to create drawings, projections and drafting of the models.
- learn how to assemble and apply constraints to different parts and components.

Pre-requisite of course: NIL

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term work	
0	0	2	1	0	30	20	25	25	100

Contents:

Sr. No.	Topics	Teaching hrs.	Weightage
1	**Introduction:** System Requirements, Getting Started with CAD Software, Important Terms and Definitions, File Menu Options, Managing Files, Menu Manager, Model Tree, Understanding the Functions of the Mouse Buttons, Ribbon Toolbars, Navigator.	**2**	**5**

2	**Basic Sketches:** Draw lines, Rectangle command, Draw Circles, Arcs, Ellipse, Introduction to Part Modelling, Fillet and Chamfer, Pallete Library, Draw Text in Sketches, Weak and Strong Dimensions.	**4**	**10**
3	**Sketch edit and modify:** Sketch Editing Tools, Draw Centre Lines, Offset Entities in Sketch, Geometric Constraints, Automatic Geometric Constraints, Use of Feature Requirements Toolbar, References, Dimensions.	**4**	**10**
4	**3d modelling basics:** Extrude, Revolve Tool, Datum Planes, Datum Axis, Datum Point & Coordinates, 3D Practice Model – 2, Feature Manager Model Tree, Sweep command, Swept Blend Feature, Helical Sweep Tool, Blend Feature, Insert Spiral Bend.	**6**	**15**
5	**Advance 3d modelling:** Round Or Fillet in 3D Models, Chamfer 3D Tool, Copy and Paste Feature, Hole Command, Draft Feature, Mirror Entities and Models, Curves Through Points, Curve through Cross Section, Curve using Equation, Curve through, Intersection, Ribs.	**4**	**10**
6	**Pattern & other important 3d tools:** Dimension Pattern, Direction Pattern, Axis Pattern, Fill Pattern, Table and Curve Pattern, Reference Pattern, Geometrical Pattern, Turbo Pattern, Shell, Variable Pull Draft Tool, Toroidal Bend.	**2**	**5**
7	**Surface modelling:** Intersect Curves and surfaces, Merge surfaces, extend tool, Trim Surfaces, Fill & Vertex Round, solidify features, Project curves and sketches, Offset and Thicken surfaces, Boundary Blend Feature, Blend Tangent to Surface, Flatten Quilt.	**6**	**15**
8	**Assembly:** Introduction To Assembly, Rigid Connection, Coincident Connection, Slider Connection, Planar Constraint, Pin And cylinder constraints, Ball and Bearing Connection, Weld Connection, Slot Connection, Sub-assembly connection, Piston Head Assembly.	**8**	**20**
9	**Drawing:** Adding Views, Projection Views, Auxiliary Views, Detailed Views, Create Section View, Insert Annotations and	**4**	**10**

	Symbols, Adding a Note, Datum Features and References, View Manager.		

References:

a) List of Books

1. Creo Parametric 2.0 Tutorial by Roger Toogood
2. Creo Parametric 4.0/Pro Engineer Black Book by Gaurav Verma

b) List of Major Equipment/ Instrument

1. PC with 3D CAD software (Creo)

Suggested Theory distribution:

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyse	Evaluate	Create
35%	40%	25%	0	0	0

Suggested List of Tutorials/Experiments

1. Tutorial 1-3 sketch
2. Tutorial 4-7 3d model
3. Tutorial 8 surface model
4. Tutorial 9-10 assembly

Instructional Method:

1. Demo on the computer with oral instruction.
2. Hands on practice with basics sketch.
3. Hands on practice on advance sketch and assembly.