II B. Tech – II Semester

(20ME4202) PRODUCT DEVELOPMENT LAB-II

Int. Marks	Ext. Marks	Total Marks		L	T	P	C
15	35	50		1	-	2	2

Pre-Requisites: Basic computer knowledge

Course objectives:

- To develop Part & Assembly 3D designs with the help of design calculations & standards.
- Drawings of assembled views for the part drawings of the following using 3D software tool and easy drawing proportions.
- To understand the basic design principles of different types of application components.

Note: The software used for the laboratory is CATIA

Module: 1

Part Design
1. Cotter Joints -   with Sleeve, with Socket and Spigot Ends, with a Gib
2. Pin joints - Knuckle Joint
3. Pulleys - Flat Belt Pulleys,V-belt Pulleys, Rope Pulley
4. Spline shaft –   Involute Splines, Parallel Splines, Helical Splines
5. Pressure Vessel - Storage Vessels, Heat Exchangers, Process Vessels
6. Cutting Tools - Drill, Milling tools, End mill.

Module: 2

Assembly Design
1. Steam Engine Parts – Stuffing Boxes, Cross Heads, Eccentrics.
2. Machine Tool Parts: Tail stock, Tool Post, Machine Vices.
3. Other Machine Parts - Screws jacks, Plummer block, Fuel Injector
4. Valves - Steam stop valve, spring loaded safety valve, feed check valve and air cock.

CATIA online tutorial links:

- https://edu.3ds.com/en/hub/virtual-laboratories
- https://www.youtube.com/channel/UCC3nTVmEYXAr_RovLLAvldg
- https://grabcad.com/tutorials/catia-v5-basic-tutorial--1

Course Outcomes:

A student who successfully fulfills this course requirement will be able to:

S. No	Course Outcome	BTL
1.	Use standard software tools to create part assemblies and check for clearances.	L4
2.	Demonstrate standards of part and assembly creation allowing an adaptable design and help for medium size project.	L4
3.	Demonstrate skill in drawing and assembling engine parts.	L4
4.	Create an assembly or product design for a suitable project	L4

Correlation of Cos with POs & PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1	0	1	0	0	0	1	1	0	1	3	2
CO2	3	3	1	1	1	1	0	0	0	1	1	2	2	2
CO3	3	3	2	1	1	2	1	0	1	2	1	2	2	2
CO4	3	3	3	1	1	1	1	0	2	1	1	1	3	2
CO5	3	3	3	1	1	1	0	1	2	1	2	1	3	2