Program: **Diploma in Mechanical Engineering**	
Course Code: **6027**	Course Title: **Production Software Lab**
Semester: **6**	Credits: **2.5**
Course Category: **Programme Core**	
Periods per week: **4(L:0 T:1 P:3)**	Periods per semester: **45**

Course Objectives:

- To deliver the power and potential of CAD (SOLIDWORKS) through a structured program built upon the industry best practices.
- To teach how to use SOLIDWORKS mechanical design software to build parametric models of parts and assemblies and make drawings of those parts and assemblies.

Course Pre-requisites:

Topic	Course code	Course name	Semester
Basic Engineering Graphics		Engineering Graphics	1
Basic knowledge on commands and construction of 2D drawings using AutoCAD		Basic Cad Lab	2
3D Modelling		Cad Lab II	4

Course Outcomes:

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive Level
CO1	Demonstrate the key characteristics and Interface of SOLIDWORKS software.	12	Understanding
CO2	Explain about Design tools and essentials of SOLIDWORKS software.	11	Understanding
CO3	Illustrate the Assembly concept and build the virtual components.	11	Understanding
CO4	Build the 2D Drawings with industry Standards and annotation.	11	Applying

CO – PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3						
CO2	3						
CO3	3						
CO4	3			2			2

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline

Module Outcome	Description	Duration (Hours)	Cognitive Level
CO1	**Demonstrate the key characteristics and Interface of SOLIDWORKS software.**		
M 1.01	Outline the key characteristics of SOLIDWORKS	2	Understanding
M 1.02	Understanding about user interface of the software	2	Understanding
M1.03	Interpret the file formats, file extensions, and Neutral file formats.	2	Understanding
M1.04	Make use of Short cut keys, customization of the software	3	Understanding
M1.05	Define the standard, Annotations, Unit system….	3	Remembering
Contents: Describe the key characteristics of SOLIDWORKS, understanding about user interface of the software, Understanding file formats, file extensions, and Neutral file formats. Utilization of Short cut keys, customization of the software, Understanding of standards, Annotations, and Unit system			
CO2	**Explain about Design tools and Essentials of SOLIDWORKS software.**		
M2.01	Explain the key characteristics of a feature-based, Parametric solid modeler	2	Understanding
M2.02	Develop the fully associated 3D solid models with constraints or user-defined relations to capture design intent.	2	Understanding
M 2.03	Utilize all available tools to edit and make changes to a part.	2	Understanding

M2.04	Apply the ramifications of making changes to parts that have configurations.	2	Understanding

M2.05	Inserting components into an assembly using all available techniques.	3	Understanding
	Series Test – I		

Contents:
Describe the key characteristics of a feature-based, Parametric solid modeler, and develop fully associated 3D solid models with constraints or user-defined relations to capture design intent. Utilize all available tools to edit and make changes to a part, Understand the ramifications of making changes to parts that have configurations. Inserting components into an assembly using all available techniques.

CO3	**Illustrate the Assembly concept and build the virtual components.**		
M3.01	Advanced part modeling techniques, including splines, Multibody parts, Sweep, Lofts, and curves…	3	Understanding
M3.02	Assembly modeling techniques including top-down assembly, assembly editing & and about Large assembly…	3	Understanding
M3.03	Solid and surface hybrid modeling	3	Understanding
M3.04	About using and creating a design library	2	Understanding

Contents:
Advanced part modeling techniques, including splines, Multi-body parts, Sweep, Lofts, and curves, Assembly modeling techniques including top-down assembly, assembly editing and large assembly, Solid and surface hybrid modeling, about using and creating of design library.

CO4	**Build the 2D Drawings with industry Standards and annotation.**		
M4.01	How to create engineering drawings of Parts & Assemblies	1	Remembering
M4.02	Construct Basic Drawing views, Model views, Section views, Detail Views etc…..	3	Applying
M4.03	List the different types of Dimensioning schemes	1	Remembering

M4.04	Develop basic annotations like welding symbols, center marks, center lines, surface symbols, etc.....	3	Applying
M4.05	Build the assembly drawing, BOM, cut list, Hole Table etc	3	Applying
	Series Test – II		

Contents:
How to create engineering drawings of Parts and assemblies, Creating basic drawing views, Model views, Section views, Detail Views, etc. Different types of Dimensioning schemes, Creating basic annotations like welding symbols, center marks, center lines, surface symbols, etc. Creating assembly drawings, BOM, cut list, Hole Table, etc.

Text / Reference

T/R	Book Title/Author
T1	Learn SolidWorks 2020 by Tayseer Almattar
T2	SolidWorks for Beginners- Arsath Natheem
T3	SolidWorks Excercises- by CADartifex
T4	Engineering Drawing, N.D.Bhatt
R1	Dr. Branoff , Engineering graphics & computer-aided design,
R2	Machine Design, K. Venugopal

Online Resources

S.No	Website Link
1	https://www.my.solidworks.com/