Lok Jagruti Kendra University
University with a Difference

Diploma
in
Automobile Engineering

Course Code:025010605

Design (SolidWorks)

Programme / Branch Name			Diploma in Automobile Engineering			
Course Name	Design (SolidWorks)				**Course Code**	025010605
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses BSC: Basic Science Courses
ESC: Engineering Science Courses PCC: Program Core Courses
OEC: Open Elective Courses PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

Teaching Hours / Week					Evaluation Scheme				
L	**T**	**P**	**Total Teaching Hours**	**Total Credit**	**CA**	**CCE**	**SEE (TH)**	**SEE (PR)**	**Total**
0	0	8	8	4	100	-	-	100	200

Legends: L: Lectures T: Tutorial P: Practical
CA: Continuous Assessment (Attendance + Activity)
CCE: Continuous & Comprehensive Evaluation
SEE (Th): Semester End Evaluation (Theory)
SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisite
- ✓ Physics
- ✓ Automobile Design
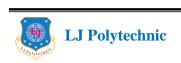- ✓ Core Automobile Subjects

3. Rationale
The Subject is designed in a way that provides students with hands-on experience in designing and modelling products using SolidWorks. SolidWorks is a powerful software widely used in the engineering industry to create 3D models and assemblies of products. The software is an essential tool for mechanical and product design engineers, and proficiency in its use is highly valued by employers. This subject aims to equip students with the necessary skills to create complex designs, modify them, and produce technical drawings and specifications.

4. Objectives
By the end of this subject, students should be able to:
- ✓ Understand the SolidWorks user interface and basic features
- ✓ Create and modify 3D models of complex products
- ✓ Create and modify assemblies of products
- ✓ Produce technical drawings and specifications of products
- ✓ Apply engineering design principles to create innovative and functional products.

5. Contents

Unit No.	Unit Name	Topics	Learning Outcome	% Weightage	Hours
1.	**Introduction to SolidWorks**	1.1 Understanding the SolidWorks user interface 1.2 Creating and modifying basic 3D models 1.3 Understanding sketching tools 1.4 Practice Exercise: Create a 3D model of a simple product using SolidWorks	• Understand the user interface and basic features of SolidWorks. • Able to create and modify basic 3D models using sketching tools.	20	31
2.	**Advanced 3D Modeling**	2.1 Creating complex 3D models using advanced tools 2.2 Understanding extrusion, revolve, and sweep features 2.3 Practice Exercise: Create a 3D model of a complex product using SolidWorks	• Able to create complex 3D models using advanced tools such as extrusion, revolve, and sweep features. • Understand the process of creating a 3D model from scratch, and will be able to apply this knowledge to their own designs.	20	31
3.	**Assemblies**	3.1 Creating assemblies of products 3.2 Understanding mates and assembly tools 3.3 Practice Exercise: Create an assembly of two or more products using SolidWorks	• Able to create assemblies of products using SolidWorks. • Understand how to use mates and assembly tools to put together complex products.	20	25
4.	**Technical Drawings**	4.1 Creating technical drawings of products 4.2 Understanding dimensioning and tolerancing 4.3 Practice Exercise: Produce a technical drawing of a product created in SolidWorks	• Able to produce technical drawings of products using SolidWorks. • Understand dimensioning and tolerancing, and will be able to apply this knowledge to their own designs.	20	25
5.	**Innovation and Functional Design**	5.1 Applying engineering design principles to create innovative and functional products	• Able to apply engineering design principles to create innovative and functional products.	20	25

		5.2 Understanding design for manufacturing and assembly (DFMA) 5.3 Practice Exercise: Create an innovative and functional product using SolidWorks, and present it to the class	• Understand design for manufacturing and assembly (DFMA), and will be able to incorporate this knowledge into their own designs.		

	Total Hours	**112**

6. Suggested Specification Table for Evaluation Scheme

Unit No.	Unit Name	Distribution of Topics According to Bloom's Taxonomy					
		R %	U %	App %	C %	E %	An %
1.	Introduction to SolidWorks	0	40	60	0	0	0
2.	Advanced 3D Modelling	0	0	10	90	0	0
3.	Assemblies	0	0	10	90	0	0
4.	Technical Drawing	25	25	10	40	0	0
5.	Innovation and Functional Design	0	0	0	100	0	0

Legends: R: Remembering   U: Understanding
App: Applying   C: Creating
E: Evaluating   An: Analyzing

7. Reference Books

1. "Engineering Design with SolidWorks 2019" by David Planchard and Marie Planchard
2. "SolidWorks 2020 and Engineering Graphics: An Integrated Approach" by Randy Shih
3. "Introduction to Solid Modeling Using SolidWorks 2020" by William Howard and Joseph Musto
4. "SolidWorks 2019 Black Book" by Gaurav Verma and Matt Weber
5. "SolidWorks 2019 Part II - Advanced Techniques" by Paul Tran
6. "SolidWorks 2020 Quick Start" by David C. Planchard
7. "Engineering Design and Graphics with SolidWorks 2019" by James D. Bethune

8. Open Sources (Website, Video, Movie)

1) https://www.youtube.com/c/TheAutomotives
2) https://theautomobileengineers.blogspot.com/
3) https://www.youtube.com/c/LearnEngineering
4) https://nptel.ac.in/course.html
5) https://Ocw.mit.edu/courses
6) https://www.youtube.com/@solidworks/playlists