SOLIDWORKS CAD Design Professional (CSWP) Certification Prep Course

Target Audience

This course is designed for SOLIDWORKS users who want to become Certified SOLIDWORKS Professionals (CSWP) and validate their advanced modeling, configuration, assembly, and design intent skills. It is suitable for engineers, designers, and professionals who already have basic SOLIDWORKS knowledge and want to achieve professional-level certification.

Course Outcomes

- Understand advanced parametric modeling concepts and design intent
- Apply equations and linked dimensions in complex models
- Create and manage configurations and design tables efficiently
- Work with multi-body parts and advanced modeling techniques
- Perform mass properties analysis using coordinate systems
- Create advanced assemblies with mates, interference detection, and collision detection
- Prepare for and successfully pass all three segments of the CSWP Certification exam

Course Objectives

- Develop advanced skills in parametric modeling and feature control
- Build proficiency in using equations, configurations, and design tables
- Enable learners to work with multi-body parts and advanced modeling workflows
- Strengthen assembly design skills including mates and motion analysis
- Reinforce learning through structured exercises aligned with CSWP exam segments
- Prepare participants comprehensively for all three segments of the CSWP certification exam

Course Outline

The course comprises **48 hours** of theory and labs and is divided into **14** different chapters. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Table of Contents

- Assembly Environment
- Drawing Environment
- SOLIDWORKS Documents
- Customizing Toolbars and Command Manager
- Mouse Gestures
- File Management

Chapter 2. Advanced Sketching

- Sketch entities – lines, rectangles, circles, arcs, ellipses, centerlines
- Sketch tools – offset, convert, trim
- Sketch relations
- Dimensions
- Fully Defined Sketches

Chapter 3. Advanced Part Modeling

- Boss and cut features – extrudes, revolves, sweeps, lofts
- Fillets and chamfers
- Draft
- Shell
- Rib
- Hole Wizard
- Linear, circular, and fill patterns
- Mirror
- Feature conditions – start and end
- Feature scope
- Move/Delete face
- Multi-body parts
- Materials

Chapter 4. Parametric Modeling and Design Intent

- Linked dimensions
- Equations
- Using equations to relate dimensions
- Updating parameters and dimension sizes
- Modifying parameters while maintaining design intent

Chapter 5. Mass Properties

- Mass properties
- Density
- Volume
- Mass
- Center of Mass
- Using coordinate system to perform mass properties analysis

Chapter 6. Advanced Modeling Techniques

- Modifying geometry on initial part to create a more complex part
- Changing and/or rearranging features of an existing SOLIDWORKS part
- Multi-body modeling techniques
- Feature suppression states

Chapter 7. Configurations and Design Tables

- Creating configurations from other configurations
- Changing configurations
- Creation of configurations using a Design Table
- Design tables
- Suppression states

Chapter 8. Reference Geometry

- Reference geometry – planes
- Axis
- Mate references
- Creating a coordinate system

Chapter 9. Assemblies

- Creating an assembly
- Adding parts to an assembly
- Inserting components - new and existing
- Replacing a part with another part in an assembly
- Inserting subassemblies
- Move/Rotate component
- External references
- In-context features
- Assembly features

Chapter 10. Assembly Mates and Motion

- Standard mates
- Advanced mates
- Restraints
- Collision detection in an assembly
- Interference detection

Chapter 11. Drawings

- Dimensions and model items
- Standard views
- Section views
- Drawing views from parts and assemblies

Chapter 12. Advanced Part Modeling Exam

- Creating a part from a drawing
- Using linked dimensions and equations to aid in modeling
- Using equations to relate dimensions
- Updating parameters and dimension sizes
- Mass property analysis
- Modifying geometry on initial part to create a more complex part
- Modifying parameters on the part at different stages while maintaining all other dimensions and design intent

Chapter 13. Configurations and Design Tables Exam

- Creating configurations from other configurations
- Changing configurations
- Creation of configurations using a Design Table
- Mass properties
- Changing and/or rearranging features of an existing SOLIDWORKS part

Chapter 14. Advanced Assemblies Exam

- Creating an assembly
- Adding parts to an assembly
- Doing collision detection when moving a part in an assembly
- Interference detection
- Basic and advanced mates
- Inserting subassemblies
- Replacing a part with another part in an assembly
- Creating a coordinate system
- Using a coordinate system to perform mass properties analysis