SOLIDWORKS Additive Manufacturing Associate (CSWA–AM) Certification Prep Course

Target Audience

This course is designed for engineering students, product designers, and manufacturing professionals preparing for the **Certified SOLIDWORKS Additive Manufacturing Associate (CSWA–AM)** exam. It is ideal for learners who want to understand additive manufacturing technologies, materials, design guidelines, and workflows, while gaining practical skills in preparing, slicing, and optimizing models for 3D printing.

Course Outcomes

By the end of this course, participants will be able to:

- Understand the fundamentals of additive manufacturing and its industry applications.
- Differentiate between machine types and processes such as FDM, SLA, SLS, and metal AM.
- Select appropriate materials based on mechanical, thermal, and application requirements.
- Apply design for additive manufacturing (DfAM) principles including supports, orientation, and lightweighting.
- Prepare CAD models for AM, validate geometry, and export files in STL/3MF formats.
- Configure slicer software settings and generate optimized toolpaths.
- Set up and calibrate machines, manage materials, and ensure safety.
- Execute printing workflows, troubleshoot issues, and optimize print quality.
- Perform post-processing including support removal, finishing, and assembly.
- Use software tools for simulation, error detection, and workflow integration.
- Ensure dimensional accuracy, surface quality, and process optimization.
- Apply exam-oriented concepts to succeed in the **CSWA–AM certification exam**.

Course Objectives

- Provide a structured foundation in additive manufacturing technologies and workflows.
- Train learners in machine types, materials, and design guidelines for AM.
- Develop proficiency in CAD preparation, slicing, and machine setup.
- Enable learners to troubleshoot printing issues and perform post-processing.
- Teach optimization strategies for accuracy, quality, and efficiency.
- Reinforce learning through exam-focused concepts and practical exercises.

Course Outline

The course comprises **32 hours** of theory and labs and is divided into **12 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:

- Toolpath preview and validation

Module 7: Machine Preparation

- Printer setup and calibration
- Bed leveling and adhesion techniques
- Material loading and handling
- Machine parameter configuration
- Safety procedures and best practices

Module 8: Printing Process

- Print execution workflow
- Monitoring print jobs
- Common printing issues
- Troubleshooting during printing
- Print optimization techniques

Module 9: Post-Processing and Finishing

- Part removal techniques
- Support removal
- Surface finishing methods
- Heat treatment and curing (for resins/metals)
- Assembly and secondary operations

Module 10: Software Tools and Printing Aids

- Overview of slicer software features
- Software-based supports and optimization tools
- Print simulation and preview tools
- Error detection and correction tools
- Workflow integration with CAD software

Module 11: Quality, Accuracy and Optimization

- Dimensional accuracy and tolerances
- Warping and shrinkage control
- Surface quality improvement
- Process optimization strategies

Module 12: Exam-Oriented Concepts (CSWA-AM Focus)

- Key theoretical concepts
- Process identification questions
- Material selection scenarios
- Design problem-solving cases
- Common exam traps and mistakes