

Autodesk Fabrication CADmep for Duct Manufacturing and Workflow Automation

Target Audience

This course is designed for mechanical engineers, duct fabrication professionals, and production engineers working in duct manufacturing companies who receive 2D AutoCAD drawings from clients and need to convert them into fabrication-ready outputs. It is ideal for professionals who are currently performing manual processes such as duct cutting, tagging, and material takeoff and want to transition to an automated workflow using Autodesk Fabrication CADmep.

Course Outcomes

- Understand the complete workflow from 2D drawings to fabrication-ready duct systems
 - Convert AutoCAD drawings into 3D duct models using fabrication standards
 - Use ITM database aligned with company standards such as SMACNA rules
 - Create duct systems using real fabrication fittings including elbows, reducers, offsets, and transitions
 - Perform spooling to break systems into manufacturing-ready parts
 - Automate material takeoff, tagging, and cutting processes
 - Generate accurate BOM and fabrication reports
 - Export data in CSV format for production and cutting lists
 - Reduce manual effort and improve fabrication efficiency
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Course Objectives

- Develop practical knowledge of Autodesk Fabrication CADmep for duct manufacturing
- Enable learners to shift from manual AutoCAD-based workflows to automated fabrication processes
- Build proficiency in working with company-specific ITM databases and fabrication standards
- Introduce spooling techniques for production-ready outputs

- Provide skills for automated BOM generation and reporting
 - Train participants in exporting fabrication data for real manufacturing use
 - Reinforce learning through real-world duct fabrication scenarios
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Course Outline

The course comprises **40-hours** of theory and labs and is divided into **10** 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

Chapter 1. Understanding Current Workflow and CADmep Introduction

- Current manual workflow using AutoCAD
 - Challenges in manual cutting, tagging, and takeoff
 - Introduction to Autodesk Fabrication CADmep
 - Overview of fabrication workflow in industry
 - Comparison between manual and automated workflow
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Chapter 2. Project Setup and Company Standards

- Setting up fabrication project
 - Understanding company standards and SMACNA rules
 - Configuration of fabrication settings
 - Working with specifications and services
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Chapter 3. ITM Database and Fabrication Parts

- Introduction to ITM database
- Understanding fabrication items
- Working with elbows, reducers, offsets, transitions
- Customizing database based on company standards

- Selecting correct fittings for fabrication
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Chapter 4. Converting 2D Drawings to Fabrication Model

- Importing AutoCAD drawings
 - Understanding layouts and references
 - Creating 3D duct systems from 2D drawings
 - Aligning fabrication model with input drawings
 - Ensuring accuracy and standards
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Chapter 5. Duct Modeling Using Fabrication Components

- Creating straight duct
 - Applying fabrication fittings
 - Routing duct systems
 - Managing connections and joints
 - Adjusting dimensions based on standards
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Chapter 6. Spooling for Fabrication Output

- Concept of spooling in duct fabrication
 - Breaking duct systems into spool parts
 - Assigning spool names and structure
 - Preparing fabrication-ready sections
 - Spool drawings and organization
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Chapter 7. Automated Tagging and Material Takeoff

- Tagging fabrication parts automatically
- Generating material takeoff
- Eliminating manual calculation
- Validating quantities
- Understanding fabrication data

Chapter 8. BOM and Report Generation

- Creating Bill of Materials
 - Generating fabrication reports
 - Customizing reports for production
 - Data organization for costing
 - Verifying report accuracy
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Chapter 9. Exporting Data for Production

- Exporting data to CSV format
 - Creating cutting lists
 - Preparing data for fabrication machines
 - Integration with production workflow
 - Data validation and error checking
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Chapter 10. Complete Real-World Workflow Project

- Importing client drawing
- Creating duct system using ITM database
- Performing spooling
- Generating BOM and reports
- Exporting data for production
- End-to-end fabrication workflow execution