ARCAN ACADEMY

COURSE NAME

3D Printing Technology

COURSE DURATION

Three days

COURSE DESCRIPTION

The Comprehensive 3D Printing Training program is designed to equip participants with the knowledge and skills to harness the power of 3D printing technology. This training covers a wide range of topics, including the fundamentals of 3D printing, various printing technologies, design considerations, material selection, troubleshooting, and real-world applications.

COURSE OBJECTIVES

- Understand the fundamentals of 3D printing technology, its history, and its potential applications.
- Familiarize with various 3D printing technologies.
- Gain knowledge about the 3D printing workflow, from designing objects to preparing files for printing and post-processing.
- Learn about different file formats and slicing software used in 3D printing.
- Develop an understanding of material selection for 3D printing based on application requirements.
- Learn how to troubleshoot common issues that arise during the 3D printing process and implement solutions.
- Understand design considerations and constraints specific to 3D printing, including support structures, overhangs, and geometries.
- Explore advanced topics in 3D printing, such as multi-material and multi-color printing, large-scale printing, and bio-printing.
- Discover real-world applications of 3D printing in various industries and understand the business implications and integration of 3D printing into existing workflows.
- Familiarize with post-processing techniques for cleaning, finishing, and inspecting 3D printed objects.
- Gain awareness of emerging trends and future developments in the field of 3D printing.

COURSE OUTLINES

Introduction to 3D Printing

- What is 3D printing?
- History and evolution of 3D printing technology
- Applications and benefits of 3D printing

Overview of 3D Printing Technologies

- Fused Deposition Modelling (FDM)
- Stereolithography (SLA)
- Selective Laser Sintering (SLS)
- Digital Light Processing (DLP)
- Binder Jetting
- Material Jetting
- Direct Metal Laser Sintering (DMLS)
- Other emerging technologies

3D Printing Workflow

- Designing for 3D printing
- File formats and slicing software
- Choosing the right materials
- Preparing the 3D printer and the build platform
- Setting up printing parameters
- Post-processing techniques

3D Printing Hardware and Equipment

- Types of 3D printers and their features
- Components and functionality of a 3D printer
- Understanding printer specifications and capabilities
- Maintenance and troubleshooting tips.

Materials for 3D Printing

- Overview of commonly used 3D printing materials
- Properties and characteristics of different materials
- Material selection based on application requirements.
- Exploring new and advanced materials

DAY THREE

Designing for 3D Printing

- Principles of 3D design
- Design considerations and constraints for 3D printing
- Optimizing designs for strength, accuracy, and functionality
- Support structures and their importance
- Designing for specific 3D printing technologies

Printing Techniques and Best Practices

- Understanding layer height, infill, and print speeds
- Calibration and fine-tuning of printer settings.
- Overhangs, bridges, and other challenging geometries
- Tips for reducing warping and improving adhesion.
- Quality control and post-print inspection

TRAINING METHODOLOGY:

- Pre-assessment
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- slides and handouts
- Post-assessment

DELIVERY METHOD:

- In person
- Online