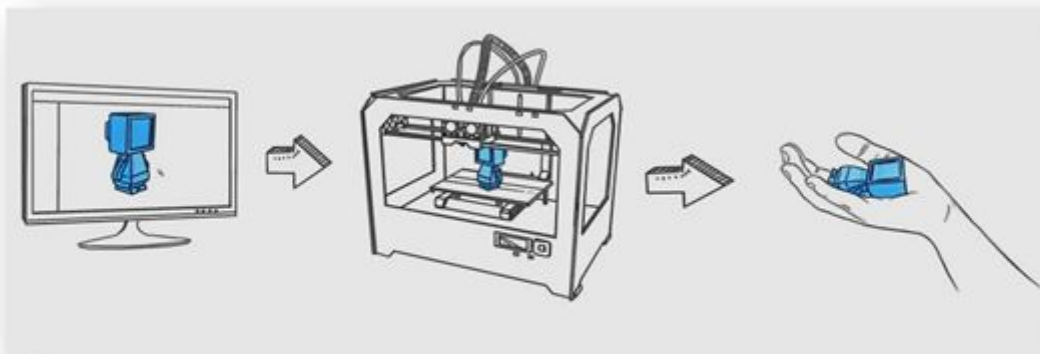


# 3D Printer Online Training Program

## Introduction:

3D Printing is a process of making a three-dimensional object of virtually any shape from a digital model. This is done using an additive process, where successive layers of material are laid down in different shapes. Additive manufacturing, and 3D printing are the names synonymously used for this technology. However, there are subtle differences in all the three techniques.



In today's highly accelerated world of technology, rapid prototyping technology is ever evolving and extending to the new arenas every day, including but not limited to:

- § Aerospace
- § Architecture
- § Automotive production
- § Education
- § Healthcare devices manufacturing
- § Jewelry
- § Manufacturing
- § Packaging
- § Pre-surgery planning & Implants
- § Product design validation
- § Research and Development

Keeping in view the multifarious nature and result oriented ability of this technology, it is prudent that the students, technology enthusiasts are given exposure to futuristic technologies like 3D printing (3DP). In the coming decade, 3D printing will revolutionize

prototyping and manufacturing. It is estimated that there will be a whole host of employment and business opportunities for those who adapt and adopt this technology. It can be gainfully utilized in indigenization of manufacturing efforts by any organization. In addition to this, the technology has a huge potential to invoke creativity and innovation strokes in one's mind which is highly desirable in the current era.

This programme on “Design & Prototyping (3D Printing)” is designed with an aim to bring out the awareness on 3D Printing and Associative technologies to the participants. 3D Printing is a flourishing advanced manufacturing technology which at its present state is being used for Rapid Prototyping and R&D projects. The scope is so exhaustive that it would not be an exaggeration if we say that this technology will make all other manufacturing methods obsolete in the years to come.

### **Objectives:**

- Ø To sensitize on the entire cycle of 3D printing process from design to prototyping.
- Ø To enable participants explore their existing facilities and work on projects.
- Ø To provide opportunity for the participants to deepen their knowledge and understanding of 3D printing & associative technologies which can be justly selected and gainfully exploited in their efforts towards career building and skill enhancement.

### **Course content:**

1. Overview of Additive Manufacturing & 3D printing
  - § 3D Printing Technologies
  - § 3D Printing Machines & Materials
  - § Nature, Scope & Applications
  - § Benefits & Limitations
2. Overview of Computer Aided Design using AutoCAD / Tinkercad
  - § Understanding the Concept of 3D Designing
  - § Learning the Software interface
  - § Exploration of 3D Design & Development
  - § Design Considerations
  - § Advanced Drawing Techniques
  - § Design a component to be 3D Printed
3. Printing demonstration on a 3D printer
4. Fixing and Post-processing the 3D print
5. Maintenance and Troubleshooting

### **Benefit to the participants:**

- Ø Exposure on 3D printing and its applications.
- Ø Demonstratio on desktop FDM 3D printing machine.

- Ø Interaction with Industrial and academic experts on the issues related to the process, procedure and application of the technology.
- Ø Technical exposure through case studies.
- Ø Ideation for developing Mini & Major projects
- Ø Conceptual clarity for writing Research Papers and doing R&D projects.