GORD 3D

Additive Manufacturing for Industrial Applications

3D Printing – Level 1

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Introduction

This course on additive manufacturing or 3D printing is offered by GORD 3D – a Center of Excellence for 3D Printing at the Gulf Organisation for Research and Development (GORD). This comprehensive two-day course is designed to take participants from the basics of 3D printing and prototyping to an in-depth understanding of its applications, technologies and solutions. Whether you're an individual aspiring to build a career in 3D printing or a professional eager to explore the potential of this cutting-edge technology in your field, this course will equip you with foundational knowledge and practical insights.

Oct 22 - 23, 2025	**09:00AM-1:00PM**	**GORD Headquarters, QSTP**	**QAR 3000** (USD 800)

Course Overview

Day 1 Fundamentals

1.1 Introduction to 3D Printing

- **Definition and History:** An in-depth explanation of what 3D printing is, its fundamental principles and key components, along with a concise overview of the history of 3D printing, covering its early developments, significant milestones, and modern-day applications.
- **Applications:** An overview of 3D printing applications across various industries, including healthcare, automotive, aerospace, and consumer products, highlighting its transformative impact and innovative uses in various sectors.

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1.2 3D Printing Technologies

Comprehensive knowledge and comparative analysis of six (6) distinct 3D printing technologies, providing a deep understanding of each. Each technology will be examined in detail, including its underlying principles, suitable applications, and representative 3D printer models. Technologies covered during the course include:

Selective Laser Melting (SLM)	Extrusion Deposition Modeling (EDM) -Robotic Arm
Bound Metal Deposition (BMD)	Selective Laser Sintering (SLS)
Fused Filament Fabrication (FFF)	Fused Deposition Modeling (FDM)

2. Design Considerations: From Concept to Creation

- **Introduction:** Importance and Applications.
- **3D Models:** Conceptualizing and designing a 3D model. Importance of initial design considerations, key factors in creating effective 3D models, and examples of practical design ideas.
- **Relevant Software:** Overview and Demonstration (SolidWorks, Fusion 360, Blender).

3. Reverse Engineering & Scanning

- **Introduction:** Importance and Applications.
- **3D Scanning Basics:** Types and Principles.
- **Relevant Software:** Overview and Demonstration.
- **Data Processing:** Converting and Optimizing Scans.

4. Online Resources For 3D Printing

Learning materials on digital tools, offering unique features and capabilities for designing and preparing 3D models. Web-based software and trainings covered during the course include:

1. Solidworks:
   https://www.youtube.com/watch?v=Ulttc_2p4DY&list=PLrOFa8sDv6jcp8E3ayUFZ4iNI8uuPjXHe
2. Learning 3D Printing:
   https://www.udemy.com/course/3d-printing-from-start-to-finish/?couponCode=MT180825G1
3. Tinkercad:Modeling Custom Designs for 3D Printing:
   https://www.tinkercad.com/

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Day 2 Applications

5.1 Slicing and Printing

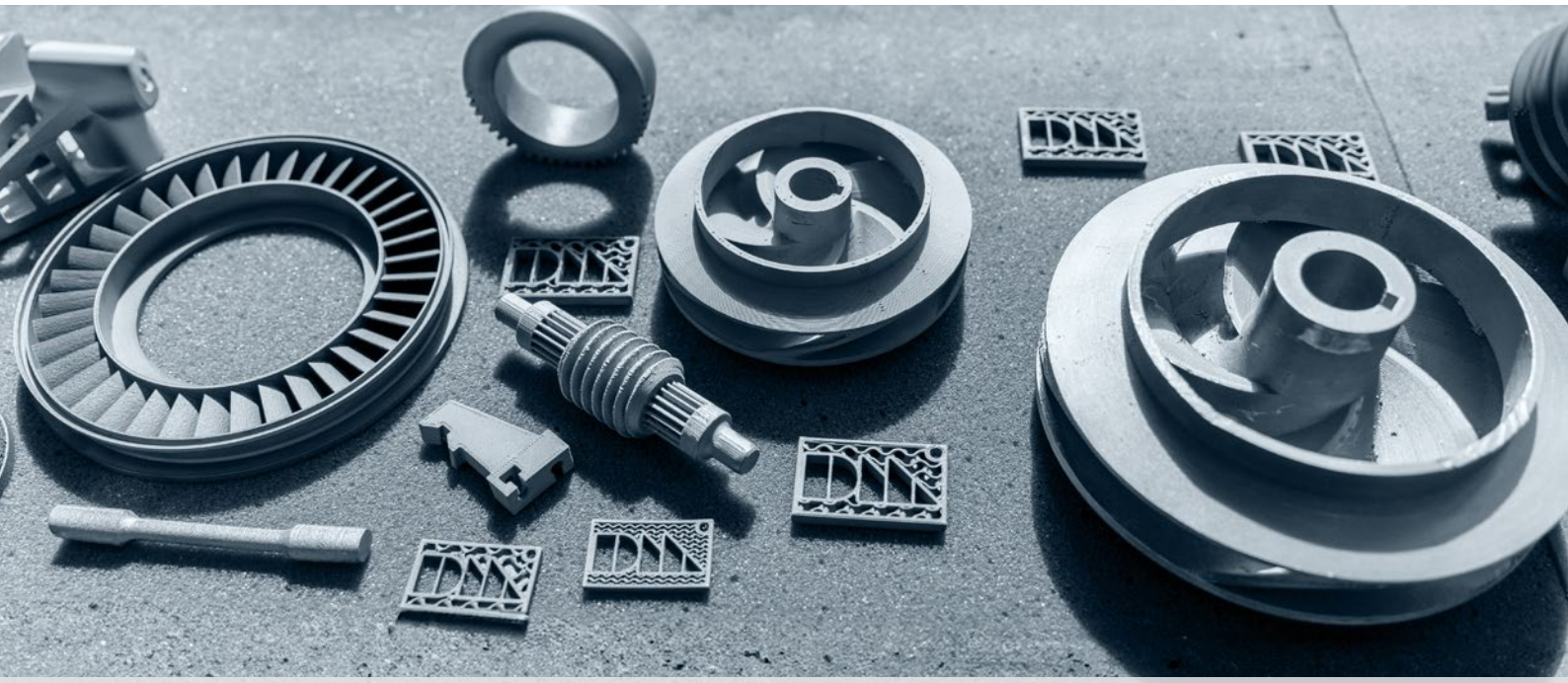
- **Introduction:** Fundamentals of slicing, a critical process in 3D printing, and navigating relevant software for basic settings such as layer height, infill and supports.
- **Relevant Software:** Overview and Demonstration.

5.2 3D Model Preparation for Printing

Guide on loading models into software and adjusting print settings. Step-by-step instructions for seamless importing and preparation of models, along with optimizing settings for different print types.

6. Experiential Tour: Technologies at GORD 3D Lab

Guided tour of GORD 3D Labs, offering firsthand encounter with all six 3D printing technologies i.e. Selective Laser Melting (SLM), Bound Metal Deposition (BMD), Fused Filament Fabrication (FFF), Extrusion Deposition Modeling (EDM) - Robotic Arm, Selective Laser Sintering (SLS), and Fused Deposition Modeling (FDM). During the tour, attendees will explore the inner workings of each technology, observe live demonstrations, and gain insights into their applications across various industries. AM experts from GORD will be available to provide in-depth explanations and address any queries.



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