

# **Guru Nanak Dev Engineering College**

An Autonomous College u/s 2(f) and 12(B) of UGC Act 1956

## **Department of Mechanical Engineering**

### **Activity Report**

A training program was organised by the Mechanical and Production Engineering Department from 2<sup>nd</sup> August 2021 to 24<sup>th</sup> August 2021 under TEQIP III with the following title and course contents:

**Title of training:** "3D Printing and Design"

**Course schedule:** 80 Hours (2<sup>nd</sup> August 2021 to 24<sup>th</sup> August 2021)

**Mode:** Online

**Participants:** Students (53)

**Course contents:** Materials and its classifications, properties of materials, Different manufacturing techniques; Introduction to Additive manufacturing and its applications in various fields of engineering; Alloys, composite materials, types and their manufacturing methods; Introduction to 3D printing, applications, 3D printing in composites; Manufacturing and performance aspects of 3D printed metal components, materials for additive manufacturing; Principles of Rapid Prototyping and various techniques of RP; STL format for AM and processing of its files; Laser and material interaction in AM and its applications; 3D printing design considerations; 3D printing in electronic devices and online monitoring in AM; Discussion on various cases of 3D Printing; Introduction to Reverse engineering and its applications and case studies; Hands on experience on 3D modelling (Components design); Assembly of components; Generation of STL Files; Hands on experience on 3D printing; Post processing of the AM products; Analysis of the products made from Additive manufacturing; Inspection and defect analysis of AM product.

**Outcome/Benefits:** Additive manufacturing (AM), broadly known as 3D printing, is transforming how products are designed, produced, and serviced. AM enables on-demand production without dedicated equipment or tooling, unlocks digital design tools, and offers breakthrough performance and unparalleled flexibility across industries. But, knowledge remains one of the greatest barriers to AM's wider adoption. So a training program was conducted for the students to get knowledge about 3D printing and its use in present era so that they can able to: Understand the technical principles and workflows for AM of polymers, metals, and composites; Assess the value of an additively manufactured part based on its production cost, performance, and use case; Design parts for AM by combining process knowledge, computational design tools, and application requirements; Learn how to select an AM process and material for a specific application; Evaluate the business case for transitioning a product to be made using AM versus a conventional approach, either in part or in whole; Identify how, when, and where AM can create value across the entire product lifecycle. So overall with this course, students can able to select the materials and appropriate technology of AM to produce the product to be delivered in the market as such.



Dr Amrinder Singh Pannu

(Course coordinator)

## Annexure II

## List of Participants

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