

B.N.M. Institute of Technology

**An Autonomous Institution under VTU
Department of Mechanical Engineering**

CENTRE OF EXCELLENCE IN 3D PRINTING TECHNOLOGY

Introduction:

The Centre of Excellence in 3D Printing Technology was established at BNMIT to provide students with hands-on experience and training in the rapidly evolving field of additive manufacturing. Equipped with state-of-the-art 3D printers and scanners, the Centre enables students to explore the diverse applications of 3D printing technology and develop innovative solutions across various industries.

Objectives:

To provide students with practical training in 3D printing technology.

To familiarize students with different types of 3D printers and their capabilities.

To encourage innovation and creativity through the design and fabrication of 3D objects.

To facilitate interdisciplinary collaboration and research in additive manufacturing.

Facilities:

FDM 3D Printer: The Centre is equipped with Fused Deposition Modeling (FDM) 3D printers, which use thermoplastic filaments to create 3D objects layer by layer. Students can utilize FDM technology for prototyping, product development, and small-scale manufacturing.

Dual Nozzle 3D Printer: Dual nozzle 3D printers allow simultaneous printing with two different materials or colors, enabling students to create complex and multi-functional objects. This technology enhances design flexibility and enables the fabrication of customized products.

Liquid-Based 3D Printer: Liquid-based 3D printers utilize photopolymer resins cured by UV light to produce high-resolution and intricate models. Students can explore the capabilities of resin-based printing for applications such as jewelry design, dental prosthetics, and architectural models.

3D Scanner: Students have access to a 3D scanner, allowing them to capture physical objects and convert them into digital models for further modification or replication. This technology enables reverse engineering, quality control, and customized product development.

Activities:

Hands-On Workshops: The Centre conducts hands-on workshops where students learn the fundamentals of 3D printing technology, including CAD modeling, slicing software, and printer operation. These workshops provide practical skills essential for design and fabrication projects.

Design Competitions: Design competitions are organized to encourage students to showcase their creativity and innovation through 3D printing. Themes may include sustainable design, medical applications, and consumer product design, fostering interdisciplinary collaboration and problem-solving.

Project-Based Learning: Students engage in project-based learning activities where they conceptualize, design, and fabricate 3D objects to solve real-world problems or showcase their creativity. Projects may include designing prototypes, functional parts, architectural models, and artistic sculptures.

Research and Development: The Centre encourages collaborative research projects between faculty members and students to explore emerging trends and applications in 3D printing technology. Research areas may include material science, process optimization, bioprinting, and sustainability.

Outcomes:

Enhanced Skillset: Students develop proficiency in 3D modeling, printing, and scanning, enhancing their employability in industries utilizing additive manufacturing technologies.

Innovation and Creativity: The Centre fosters a culture of innovation and creativity, empowering students to explore new design concepts and fabrication techniques.

Academic Excellence: The Centre contributes to BNMIT's academic excellence by providing cutting-edge facilities and research opportunities in 3D printing technology.

Conclusion:

The establishment of the Centre of Excellence in 3D Printing Technology at BNMIT marks a significant milestone in providing students with cutting-edge education and training in additive manufacturing. By leveraging state-of-the-art facilities and fostering a culture of innovation, the Centre prepares students to become skilled professionals and pioneers in the rapidly evolving field of 3D printing technology.

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3D printing is an additive technology used to manufacture parts. It is a process of making a three dimensional object from digital files. It is typically fast, with low fixed setup costs, and can create more complex geometries than traditional technologies, with an ever-expanding list of materials. It is used extensively in the engineering industry, particularly for prototyping and creating lightweight geometries.

Date of Purchase	Description	Quantity
27/10/2022	ALPI V3 SA300	01
27/10/2022	ALPI V3 DA300	01
08/02/2023	Creativity Ender 3 V2 Neo FDM 3D Printer	03

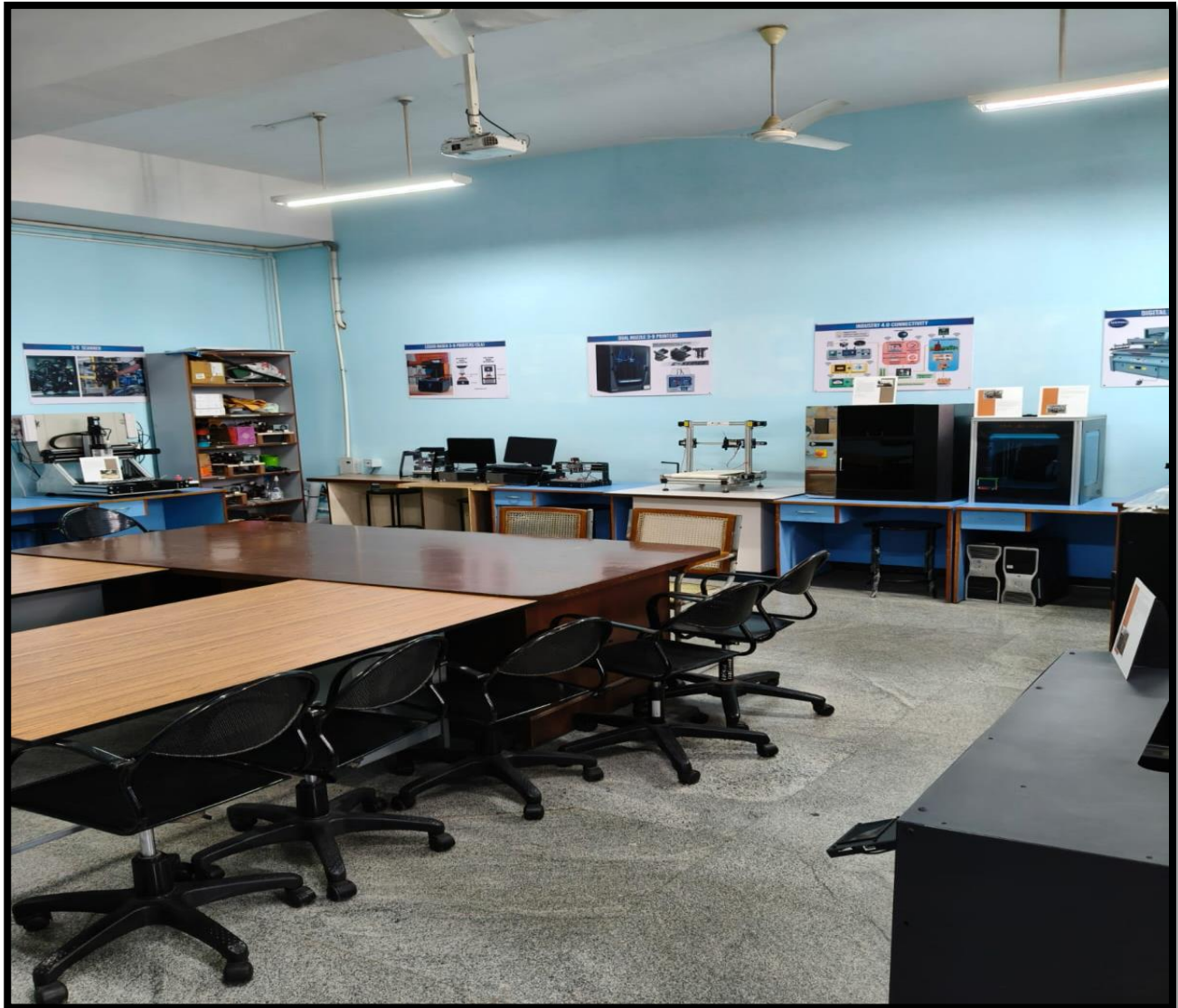


Fig. 3D Printing Lab

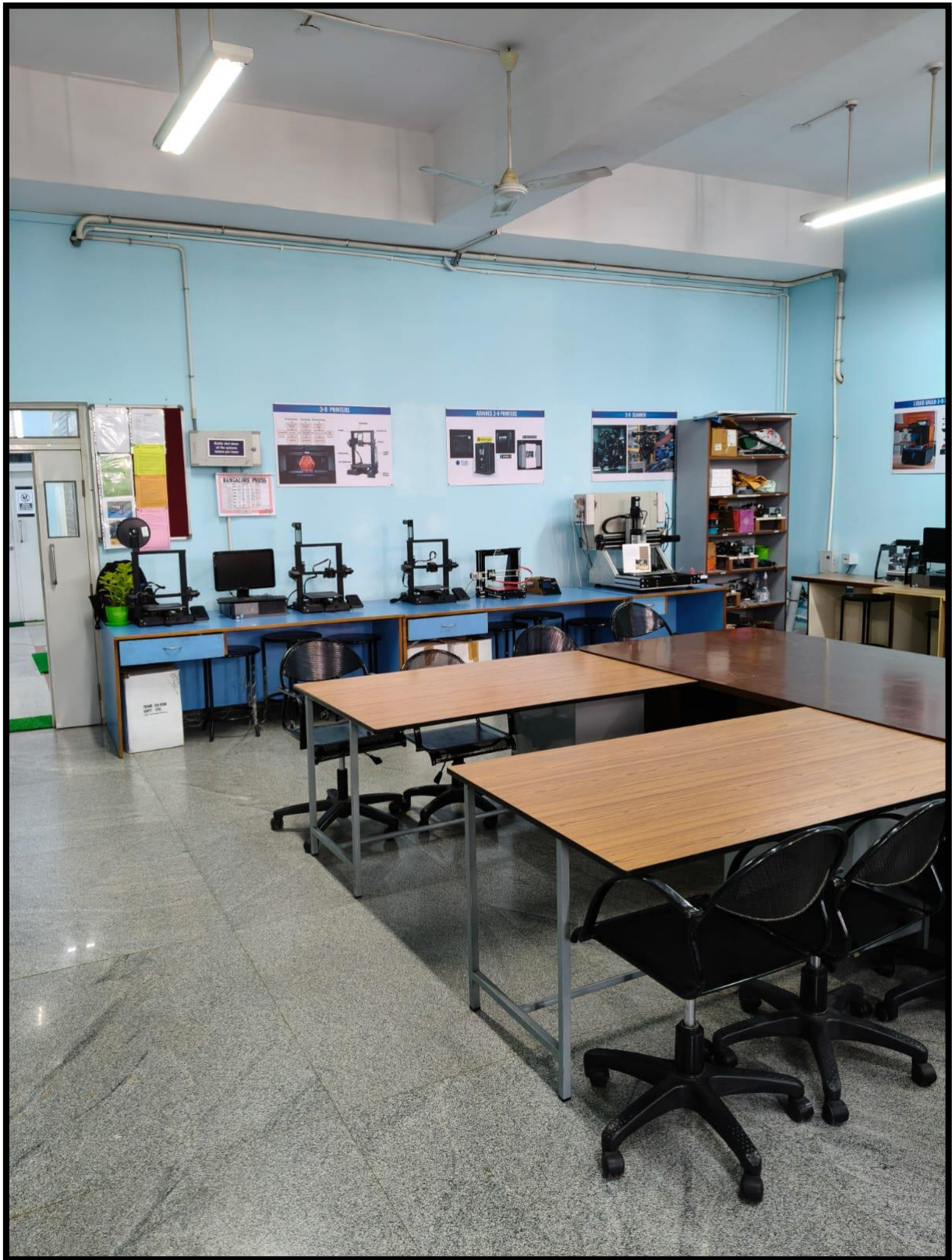


Fig. 3D Printing Lab