One Week Short Term Course
on
Digital Twinning
of
Material Processing Technologies

February 03-07, 2025

Organized
by
Department of Mechanical Engineering
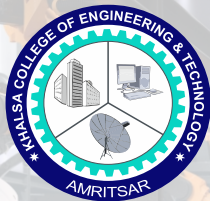
Khalsa College of Engineering & Technology, Amritsar
Governed by Khalsa College Charitable Society
(Accredited by NAAC Grade "A")

in association with

National Institute of Technical Teachers Training & Research (Chandigarh)

About Khalsa College of Engineering & Technology

Established by the legendary Khalsa College Charitable Society in 2009, the college has rapidly grown to become the institution of choice for students in Amritsar who are interested in earning a technical degree. A beautiful college building, hostels, workshops, a cutting-edge fully automated library, seminar rooms, large classrooms, and laboratories equipped with cutting-edge recent software, instruments, and machines can all be found on the college's 16.27-acre campus, which is located in the affluent community of Ranjit Avenue. Students from all across India and the rest of the world come to our institute to study because of our forward-thinking instructional strategies, warm and inviting environment, and emphasis on additional skills to complement the primary curriculum. The principle behind Khalsa College of Engineering & Technology is all-encompassing and comprehensive in nature. The state-of-the-art facilities and committed teaching personnel at Khalsa College of Engineering & Technology are increasing the frontiers of engineering education as well as the opportunities available to graduates to pursue their respective professions.

Objectives of STC

➢ Enhance understanding of digital twinning concepts and their role in optimizing material processing technologies for improved efficiency and productivity.

➢ Provide insights into real-time monitoring, simulation, and predictive analysis to revolutionize traditional material processing workflows.

➢ Equip participants with knowledge of advanced digital tools and techniques for virtual modeling and replication of physical processes.

➢ Explore the integration of IoT, AI, and big data analytics in material processing through digital twinning applications.

➢ Foster interdisciplinary collaboration for innovative problem-solving and future research in digital manufacturing and material technologies.

➢ Discuss case studies and industrial applications to illustrate practical implementation of digital twinning in material processing.

➢ Promote skill development in cutting-edge software and technologies for enhancing decision-making in smart manufacturing systems.

STC Outcome

👍 Understand the concept of digital twinning and its application in material processing technologies for real-time monitoring and optimization.

👍 Develop skills to simulate and analyze material behavior using digital twin models to enhance process efficiency and accuracy.

👍 Explore the integration of IoT, AI, and ML in digital twinning to enable predictive maintenance and decision-making in manufacturing.

👍 Gain knowledge of advanced sensors and data acquisition techniques for creating precise digital representations of material processing systems.

👍 Learn to design and implement digital twin frameworks for improving product quality and reducing production time and costs.

👍 Assess the challenges and opportunities of adopting digital twinning technology in modern industrial material processing practices.

👍 Apply digital twin technology to solve real-world material processing problems through hands-on practice and collaborative project work.
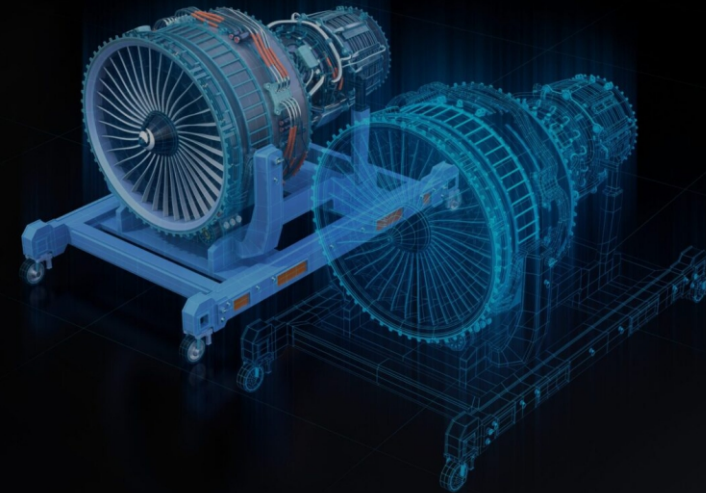
Course Content

The STC on "Digital Twinning of Material Processing Technologies," organized by NITTR Chandigarh, is designed to provide participants with a comprehensive understanding of digital twinning and its applications in material processing. The course aims to bridge the gap between physical processes and their virtual counterparts, enhancing efficiency and precision in manufacturing. Participants will be introduced to the concept of digital twins, their creation, and the benefits they bring to industries, particularly in the field of material processing. The course will cover the following key topics:

➢ **Introduction to Digital Twinning:** Basics, evolution, and importance in material processing.
➢ **Key Components:** Sensors, IoT, data integration, real-time monitoring, and simulation.
➢ **Applications:** Optimizing material properties, predictive maintenance, and troubleshooting.
➢ **Modeling & Simulation:** Techniques for simulating material behavior and processes.
➢ **Data Analytics & Machine Learning:** Using AI and machine learning for process improvement.
➢ **Implementation Challenges:** Addressing data accuracy and technological barriers.
➢ **Future Trends:** Advancements in digital twins and their role in Industry 4.0.

This course will provide valuable insights for engineers, researchers, and professionals aiming to enhance material processing systems using digital twin technology.

Eligibility

The program is open to the faculty of Engineering and Polytechnic Colleges/Universities and Research scholars from any technical institute.

How To Apply

Interested participants need to register at the following link:
https://fdp.nitttrchd.ac.in/backingup/

Steps for applying for Short Term Courses:

The registration fees in Rs. 118/-

Step 1: All participants are required to create their online account through one time registration as new user. After registration, participants:
a) can Manage/Update their profile.
b) Apply for Training Programme
View all the Trainings they have applied and attended.
Step 2: Verify mobile no through OTP. (without mobile no verification participants will not be able to login to their account)
Step 3: After login, participant has to click on Apply for STC menu in the left panel.
Step 4: Select the Mechanical Engineering Department and Online Mode to search the Course.
Step 5: Apply for "Digital Twinning of Material Processing Technologies" Short Term Course. Select **Khalsa College of Engineering and Technology, Amritsar as a registered Remote Centre**.
Step 6: Download Application form under STC Applied menu in the left panel, Print it, get it duly signed by Competent Authority of your Institution
Step 7: Upload the signed Application form/sponsorship letter under upload sponsorship menu in the left panel
Step 8: Confirmation to the participants will be sent by the programme coordinator
Step 9: All confirmed participants must Join online/offline (as per the mode of course conduct) at 9:30 am on the starting day of the training
Step 10: After successful completion of the course, participants can download completion certificate of Short-Term Courses/Faculty Development Programmes.

Note: Courses to be attended from Registered Remote Centre, Participants will attend the Training through Video Conferencing sitting remotely.

Faculty/Instructor/ Technical Staff/ Student/ Research Scholar	INR 118 /-
For participants from Industry/ NON AICTE approved Institution	INR 5900/-

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Hon. Secretary, Khalsa College Charitable Society, Pro-Chancellor Khalsa University, Amritsar

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