Indian Institute of Science
भारतीय विज्ञान संस्थान

Programme Partner

NSE talent sprint

BATCH 4

Prepare for Industry 4.0

PG Level Advanced Certification Programme in

Digital Manufacturing and Smart Factories

- Learn from Top Experts at IISc
- On TalentSprint's Patent-pending Learning Platform
- Experience Hands-on Learning with State-of-the-art Tools
- Implement Projects at CPDM Smart Factory Labs

iisc.talentsprint.com/dmsf

Become a Digital Manufacturing Expert

Get the IISc Advantage

Learn from IISc Faculty, experts in Product Design and Manufacturing, Mechanical Engineering, Electronics Systems Engineering, Materials Engineering, Computer Science and Automation

Hands-On Learning Experience

Practitioner's curriculum supported by Lab Demonstrations and Exercises using State-of-the-art Digital Tools at IISc Smart Factory Labs

The TalentSprint Advantage

Learn on TalentSprint's patent-pending Digital Platform. Network with 3000+ TalentSprint Deep Tech Alumni. Access Career Accelerator.

> The early adopters of Industry 4.0 report stronger ability to respond to the COVID-19 crisis
>
> McKinsey & Company

Shaping the Future of Manufacturing

Demand

67% Manufacturers Accelerated Digital Projects During Pandemic

Growth

Digital Manufacturing Market to Cross $767 Billion by 2025

RoI

Digital Manufacturing Reduced Machine Downtime by 50%

Worldwide, Industry 4.0 is fuelling the emergence of smart factories across diverse industry verticals, including FMCG, automotive, healthcare, aerospace, defence, etc. The adoption of connected and intelligent digital technologies further enables smart factories to enhance productivity, profitability, compliance, and customer delight.

The digital manufacturing industry is growing and is expected to reach $767.82 billion by 2025. India, among other countries, views manufacturing as vital to the country's digital transformation strategy. With smart factories re-imagining manufacturing jobs, there is a growing need for professionals savvy with emerging technologies to lead the digital transformation in the sector.

The PG Level Advanced Certification Programme in Digital Manufacturing and Smart Factories aims to build an ecosystem of such professionals. It is a 5-month programme coordinated by the Centre for Product Design and Manufacturing (CPDM), a research and technology-intensive design and manufacturing department at IISc. Participants will learn from a Faculty Group spread across the Product Design and Manufacturing, Mechanical Engineering, Electronics Systems Engineering, Materials Engineering, Computer Science and Automation Departments at IISc.

The programme is delivered in an experiential learning format comprising Masterclass Lectures, Lab exercises using Comprehensive Digital Tools and Project implementation at the IISc Smart Factory Labs.

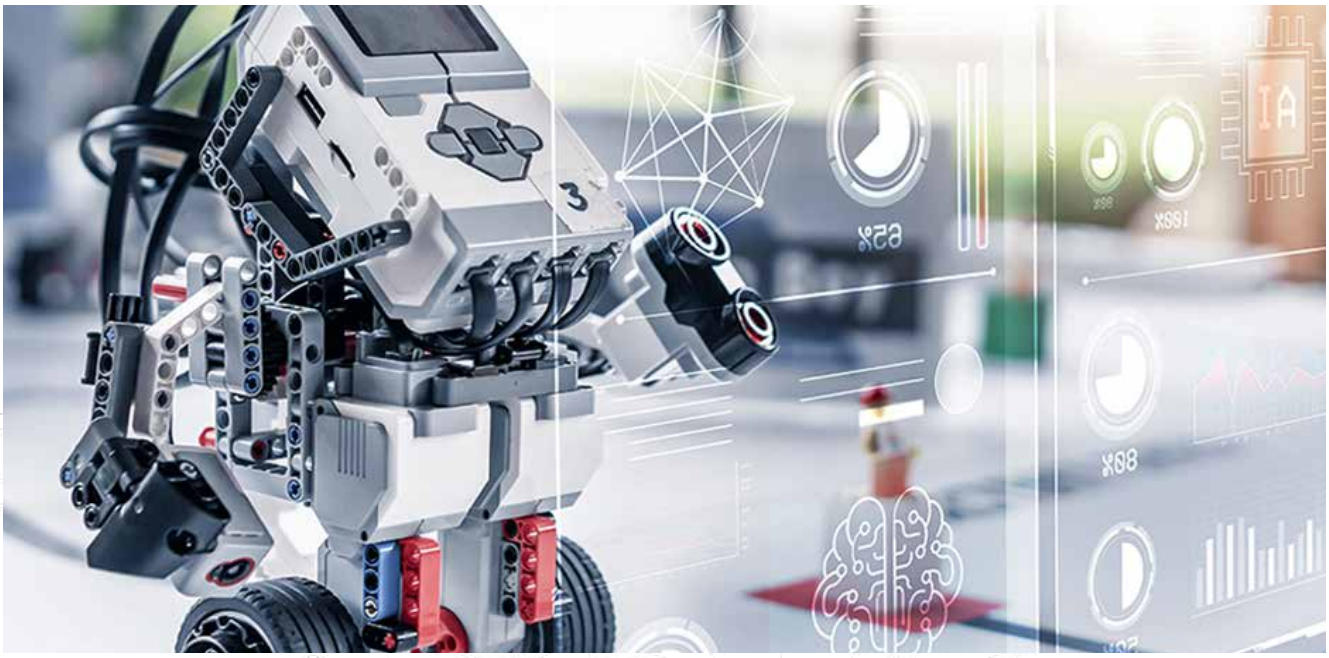
Global Demand for Industry 4.0 Professionals

- Digital Manufacturing Lead - Senior Manager (33+ Openings)
- Digital Manufacturing Consultant (1607+ Openings)
- Manufacturing Execution System Application Developer (65+ Openings)
- Manufacturing Application Developer (190+ Openings)
- Smart Factory Manufacturing Engineer (64+ Openings)
- Industrial Engineer - Digital Manufacturing (171+ Openings)

And More...

Source

LinkedIn SimplyHired indeed



Learn from Accomplished Academia

The curriculum will be taught by an impressive IISc Faculty Group bearing academic accreditation from premier institutions and trained in the best laboratories around the world.

Amaresh Chakrabarti

Design Synthesis, Eco-Design, AI and Data Analytics, Product Informatics, Smart Manufacturing, Biomedical Devices Sensors/Actuators

Ph.D., in Engineering Design from University of Cambridge, UK.

Senior Professor and Chairman of Centre for Product Design and Manufacturing (CPDM), IISc. He has 11 eleven patents to his name that cover a range of applications in the area of digital manufacturing. He founded IDeASLab, India's first Design Observatory at IISc. He is also among the global top 1% of researchers in 'Design Practice & Management'. His research interests include Design Synthesis, Eco-Design, AI and Data Analytics, Product Informatics, Smart Manufacturing and Biomedical Devices Sensors/Actuators.

B Gurumoorthy

CAD, Product Informatics, Computational Metrology, Computer Aided Prototyping, Product Design

Ph. D. Mechanical Engineering, Carnegie Mellon University, Pittsburgh USA

Professor at the Centre for Product Design and Manufacturing (CPDM) and Department of Mechanical Engineering, IISc. He is also the present Chief Executive of Society for Innovation and Development, IISc. He has 6 patents to his name and two of the technologies developed in his laboratory - Automatic Feature Recognition and Visual Interactive Solids have been licensed to industry and are in active use. His research interests include CAD, Product Informatics, Computational Metrology, Computer Aided Prototyping and Product Design.

Dr. Abhra Roy Chowdhury

Robotics, Automation, Collaborative Mobile Robots, Human-Robot Collaboration, Mechatronics, Bioinspiration, Biomimetics

Ph.D., Robotics and Control Engineering, National University of Singapore, Singapore

Assistant Professor at the Centre for Product Design and Manufacturing (CPDM), IISc. He is also the Principal Investigator of the Robotics Innovations Lab at CPDM where he leads a team of enthusiastic and multi-disciplinary students who share the vision of innovating in the field of Robotics & Automation for Human welfare. His research interests include Robotics, Automation, Collaborative Mobile Robots, Human-Robot Collaboration, Mechatronics, Bioinspiration and Biomimetics.

Manish Arora

Biomedical Devices, Co-Design, Collaboration, Open-Source Design

Ph.D., Applied Physics, University of Twente, The Netherlands

Assistant Professor at the Centre for Product Design and Manufacturing (CPDM), IISc. He is also the Principal Investigator of the UTSAAH (Universal Technology Solutions for Accessible and Affordable Healthcare) Laboratory, IISc. Under his leadership, UTSAAH works towards developing affordable and accessible medical technology solutions for promoting universal healthcare. His research interests include Biomedical Devices, Co-Design, Collaboration and Open-Source Design.

Pradipta Biswas

Human Computer Interaction, User Modelling, Multimodal Human-Machine Interaction

Ph.D., Computer Science, University of Cambridge, UK

Assistant Professor at the Centre for Product Design and Manufacturing (CPDM) and Robert Bosch Centre for Cyber Physical Systems, IISc. He set up the Interaction Design (I3D) Lab at CPDM, IISc.His research interests include User modelling, Multimodal Human-Machine interaction for Aviation and Automotive environments and for Assistive Technology.

Dr. Abhijit Biswas

Biomedical Engineering, Manufacturing Engineering, Haptics, Electronics and Instrumentation, Power Systems, IoT, Embedded Systems

Ph.D., Applied Mechanics (Haptics, Biomedical Engineering), IIT Madras

Assistant Professor at the Centre for Product Design and Manufacturing (CPDM), IISc. Before switching his career to teaching, he worked as Head of Research and Development at Abhipsita Technologies (India), and as Chief Technology Officer at Dynocardia Inc (USA) and Merkel Haptics Systems, (a spinoff company from IIT Madras). His research interests include Biomedical Engineering, Manufacturing Engineering, Haptics, Electronics and Instrumentation, Power Systems, IoT and Embedded Systems.

Dr. Rina Maiti

Human Factors Engineering, Biomechanics, Product Design, Medical Engineering, Rehabilitation Engineering, Occupational Health and Safety, Biosensor Design, Basic Medical Instrumentation, Work and Sports Engineering related Design

Ph.D., Biomedical Engineering, IIT Bombay

Assistant Professor at the Centre for Product Design and Manufacturing (CPDM) and Professor-in-charge of Human Engineering Research Laboratory at IISc. She has two patents to her credit. Her research interests include Human Factors Engineering, Biomechanics, Product Design, Medical Engineering, Rehabilitation Engineering, Occupational Health and Safety, Biosensor Design, Basic Medical Instrumentation and Work and Sports Engineering related Design.

Dr. Koushik Vishwanathan

Advanced Manufacturing and Finishing Processes, Experimental Mechanics, Metrology, Theoretical Methods in Mechanics and Physics

Ph.D., Applied Physics, University of Twente, The Netherlands

Assistant Professor at the Department of Mechanical Engineering, IISc. His research interests include Advanced Manufacturing and Finishing Processes, Experimental Mechanics, Metrology and Theoretical Methods in Mechanics and Physics

Satyam Suwas

Processing-Texture Relationship, Deformation and Thermo-Mechanical Processing, Microstructure-Mechanical Property Correlation, Additive Manufacturing

Ph.D., Materials and Metallurgical Engineering, IIT Kanpur

Professor and Chairman of the Department of Materials Engineering and an Associate Faculty at the Centre for Product Design and Manufacturing (CPDM) and Interdisciplinary Centre for Energy Research, IISc. He also leads the research and projects at the Laboratory for Texture and Related Studies, dedicated to research in the field of crystallographic texture. He has 5 patents to his credit. His research interests include Processing-Texture Relationship, Deformation and Thermo-Mechanical Processing, Microstructure-Mechanical Property Correlation and Additive Manufacturing.

Dr. Thulasi Raman K H

Additive Manufacturing Machine and Process Development, Electron Beam and Plasma Processing of Materials, Novel Material Processing System Design, Thin Film Materials, Surface and Interface Analysis, Novel Process Monitoring Instrumentation, Plasma Electrolytic Polishing

Ph.D., Dept. of Instrumentation and Applied Physics, IISc

Integrated Programme Lead at the Center of Excellence for Additive Manufacturing, IISc. He is also a visiting researcher to Wipro 3D as a part of AM-CoE. His research interests include Additive Manufacturing Machine and Process Development, Electron Beam and Plasma Processing of Materials, Novel Material Processing System Design, Thin Film Materials, Surface and Interface Analysis, Novel Process Monitoring Instrumentation and Plasma Electrolytic Polishing.

Dr. Ashitava Ghosal

Kinematics, Dynamics, Control and Design of Robots and other Computer controlled Mechanical Systems, Theoretical and Numerical Investigations of Non-linear Dynamical Systems, Kinematics of Parallel Mechanisms and Manipulators, Design of Mechanical Systems, Biomedical devices, CAD/CAM

Ph.D., Mechanical Engineering, Stanford University, California, USA

Professor at the Department of Mechanical Engineering, IISc. He has 10 patents to his credit. His research interests include Kinematics, Dynamics, Control and Design of Robots and other Computer controlled Mechanical Systems, Theoretical and Numerical Investigations of Non-linear Dynamical Systems, Kinematics of Parallel Mechanisms and Manipulators, Design of Mechanical Systems, Biomedical devices and CAD/CAM.

Haresh Dagale

Embedded systems, TCP-IP Networking, Wireless Networking, VoIP, Audio-Video Streaming, Security & Reliability Issues in Cyber-Physical Systems, IoT

M.Sc., Engineering, IISc

Principal Research Scientist with the Department of Electronic Systems Engineering (DESE), IISc. He is an acknowledged expert in Communication Networks and Embedded Systems. He is passionate about developing IoT solutions for Healthcare and SmartGrid applications. He has worked on various industry and government-sponsored projects. His research interests include Embedded systems, TCP-IP Networking, Wireless Networking, VoIP and Audio-Video Streaming.

Dr. G K Ananthasuresh

Compliant Mechanisms, Design Optimization, Topology Optimization, Mechanisms and Kinematics, MEMS, Biomechanics, Micromanipulation, Protein Design

Ph.D., Mechanical Engineering, University of Michigan, Ann Arbor, USA

Professor and Chairman of Dept. of Mechanical Engineering, IISc. A recipient of the prestigious Shanti Swarup Bhatnagar Award (2010) for Engineering Sciences, he also heads the Multidisciplinary and Multi-scale Device and Design Lab (M2D2) at IISc. His research interests include Compliant Mechanisms, Design Optimization, Topology Optimization, Mechanisms and Kinematics, MEMS, Biomechanics, Micromanipulation and Protein Design.

Dr. Vishal Singh

Building Information Modeling, Design Computing and Cognition, Elements of Design, Multidisciplinary Collaboration, Systemic Innovation, Product Service Systems

Ph.D., Computing, University of Sydney, Australia

Associate Professor at the Centre for Product Design and Manufacturing (CPDM), IISc. He is also Chairman of the Board of Visualynk, a Finland based firm offering Cloud-oriented, SaaS solutions for efficient management and utilization of FM (Facility Management) data. His research interests include Building Information Modeling, Design Computing and Cognition, Elements of Design, Multidisciplinary Collaboration, Systemic Innovation and Product Service Systems

Dr. Ramesh Chandra Hansdah

Real-Time Operating Systems, Distributed Computing Systems, Computer Networks, Network Security Protocols

Ph.D. Computer Science, IISc

Professor at the Department of Computer Science and Automation, IISc. His research interests include Real-Time Operating Systems, Distributed Computing Systems, Computer Networks and Network Security Protocols.

Real-World Curriculum

Practitioner's curriculum includes masterclasses by IISc Faculty, Use Cases, Experiments with Digital Tools, Case Studies, and Capstones for effective learning

Industry 4.0 Fundamentals

- Frameworks and Technologies
- Protocols and Standards

Digital Manufacturing

- CAD and CIM
- Computational Metrology, Factory Simulation

Electronics and Mechatronics

- Mechatronics for Digital Manufacturing
- Sensors and Actuators for Digital Manufacturing

AI, ML, Analytics

- Artificial Intelligence
- Machine Learning and Data Analytics

IoT and Digital Twin

- Internet of Things
- Digital Twins

AR/VR/MR/Haptics

- Virtual/Augmented/Mixed Reality
- Haptics

Robotics and Autonomous Systems

- Industrial and Collaborative Robotics
- Autonomous Systems

Additive Manufacturing

- Polymer Additive Manufacturing
- Metal Additive Manufacturing

Design for Additive Manufacturing

- Shape, Material and Product Representation; Topology Optimization
- Design Principles, Rules and Guidelines for Additive Manufacturing

Cyber Security

- Concepts and Technologies
- Protocols and Standards

Learning Supported with Digital Tools


Metal Additive Manufacturing


Polymer Additive Manufacturing


Automated Guided Vehicles (AGV)


Industrial Robots


Collaborative Robot


PLM Suite and COMSOL


ThingWorx and Dimo Maint

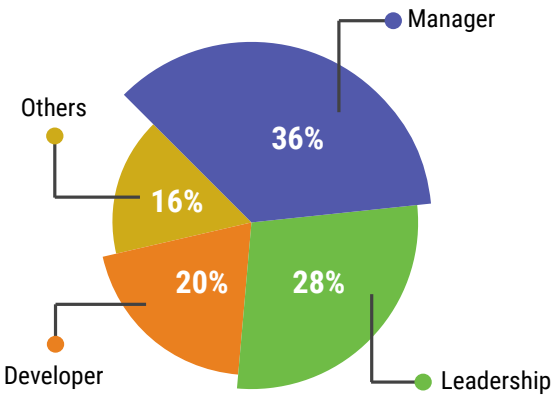

CNC Milling Centre


Metal Laser Router

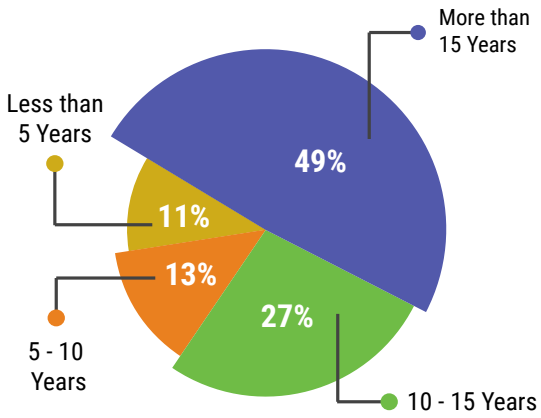
Lab Exercises and Demonstration

- IISc Smart Factory Demonstration
- AR/VR/MR/ Haptics
- IoT and Digital Twins
- Advanced Machining and Metrology
- Robotics and Autonomous Systems
- Digital Manufacturing
- Additive Manufacturing
- Cybersecurity
- Electronics, Mechatronics and Industry 4.0

Job role



Experience



Find out why professionals want to join the programme

I see a vast gap between digitalisation that I read and my practical experience in the manufacturing industry. This programme would show ways to digitise the conventional business ecosystem.

Pravin Nair

Quant Business Analyst LLP, AGM Internal Audit IT

I am currently leading a group of supervisors and engineers, driving smart connected factory solutions. This programme will help me better my ability to expedite these solutions.

Balaji Thiagarajan

Quality Manager, John Deere

I am impressed with the curriculum topics covered; IoT, additive manufacturing and robotics. It delivers broad concepts focused on the design while considering future challenges. Eager to explore this field.

Sarun

Architect, Akrivia Automation

I have experienced how safety, precision, troubleshooting, etc., has grown several folds in manufacturing with intelligent technologies. Hence, I want to be part of this and leverage Industry 4.0 solutions.

Sanjay Krishna

Assembly and Maintenance Engineer, Koyo Ltd.

I am interested in learning about Industry 4.0, its design, deployment, and the impact of its implementation. There is a shortage of skills in the market today & with this programme, I can do well.

Philip Abraham

Assistant General Manager South, Trumpf India

I would like to be hands-on with Industry 4.0 concepts, Digital Manufacturing, IoT, and Digital Twin. I need further mentoring and support, a platform to build my network and explore new opportunities through this programme.

Prashanth Achar

Group Lead, GKN Automotive/Aerospace

Interested in process control, automation, kinetics, simulation and modelling. I believe new-age technologies like AI and ML, IoT, etc., will disrupt manufacturing in many ways. This programme will help me keep abreast of the latest developments.

Prakash Krishnamurthy

Director, Burgess Instruments Pvt. Ltd.

I need to build capabilities in smart manufacturing for designing and implementing OT/IT converged solutions. Through this programme, I should be able to guide the business on the industry best practices to improve processes and adopt smart manufacturing techniques.

Eugene Moses

Enterprise Solution Architect, Caterpillar Inc.

Immersive Learning

- Faculty-led Interactive Masterclass Lectures
- Hands-on Learning with State-of the-art Tools
- Mentor Support
- Lab Demonstrations
- Workshops
- Case Studies
- Two Campus visits of 3 days each

Who is eligible?

Education

B.E./M.E./B.Tech/M.Tech or an equivalent degree

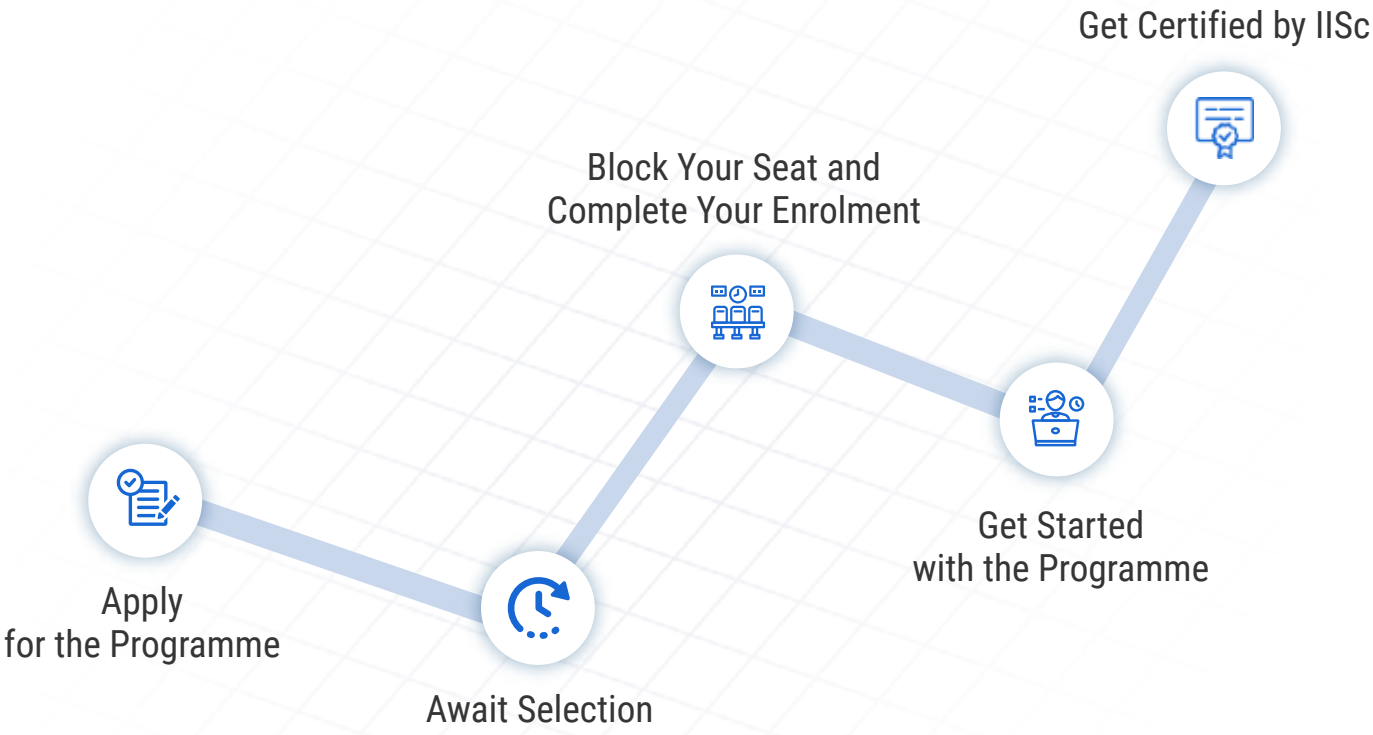
Experience

Minimum 1 year industrial experience

Ideal For

- Professionals working in manufacturing industry mainly in Strategic and Managerial roles
- Professionals working across IoT, Product Design, Materials, Mechanics and System Design functions in Automotive, Aerospace, FMCG, Pharma/Medical Equipment Production, Energy, Metals and Mining, and Oil and Gas – potential sectors for deployment of Digital Manufacturing and Smart Factory concept
- Professionals aiming for career transition and willing to explore Industry 4.0

Your Learning Journey



The selection for the programme will be done by IISc and is strictly based on the eligibility criteria and the motivation of applicants as expressed in their statement of purpose.

Fee with Flexible Payment Options

Details	Domestic Participants	International Participants
Program Fee	~~₹3,10,000~~	~~$4,850~~
	Scholarship Fee ₹2,60,000	Scholarship Fee $3,850

0% EMI available

Nominate your Employee to Avail Special Benefits

Scholarships available

GST as applicable

Smart Factory Fee: The above fee includes Smart Factory Fee

Campus visit fee will be based on actuals and to be borne by the participants

Application fee of ₹2,000

Fee is non-refundable and non-transferable.

About IISc

QS World University Rankings #1 (2022)*

2 Bharat Ratna Awardees (1954, 2014)

RUR World #62 (2020)

University (2016, 2020 and 2022) Research University (2022)

Times Higher Education #1 University in India (2020)

*Based on metric of Citations per Faculty

IISc is India's premier institution for advanced scientific and technological research and education. It was granted the Institute of Eminence status in 2018. It is one of few Indian institutions to get featured in world university rankings consistently. For more information about IISc, visit https://www.iisc.ac.in

Centre for Product Design and Manufacturing (CPDM)

CENTRE FOR PRODUCT DESIGN & MANUFACTURING
Indian Institute of Science

The Centre for Product Design and Manufacturing is the design and manufacturing face of IISc, that trains students in developing systemically-complex, technologically-intensive, and socially-impactful and sustainable solutions. It has been ranked alongside the design schools and research centres in Stanford, Delft, Cambridge and CMU. The programme will be coordinated by CPDM and taught by a Faculty group teaching at the Product Design and Manufacturing, Mechanical Engineering, Electronics Systems Engineering, Materials Engineering, Computer Science and Automation Departments at IISc.

About TalentSprint

10 Years of Excellence **200K** Lacs Empowered Professionals **95%** Completion Rate **85** Net Promoter Score

Established in 2010, TalentSprint is a part of NSE group and a global edtech company that brings transformational high-end and deep-tech learning programs to young and experienced professionals. The company's digital learning platform ipearl.ai offers a hybrid onsite/online experience to seekers of deep technology expertise. TalentSprint partners with top academic institutions and global corporations to create and deliver world class programs, certifications, and outcomes.Its programs have consistently seen a high engagement rate and customer delight. It is a leading Innovation Partner for the National Skill Development Corporation, an arm of the Ministry of Skill Development and Entrepreneurship, Government of India. A recipient of various prestigious accolades, TalentSprint was recently honored with the Indian Achievers Award 2022, for its excellence in building deeptech talent in India. For more information about TalentSprint, visit TalentSprint website

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Programme Partner

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