



ADVANCED CERTIFICATION PROGRAMME IN

# DIGITAL MANUFACTURING

**An Industry 4.0 Programme for Industry Professionals**

Offered By : Center for Continuing Education, Indian Institute of Science

Ranked #1 University in India by NIRF (2016-2025), Indias No. 1 Research Institute (2021-2025)

100% Live  
Interactive Class

6-Month  
Weekend course

Two Immersive  
Campus Visits at IISc

# ABOUT

The Digital Manufacturing Programme offered by CCE-IISc prepares professionals to lead Industry 4.0 innovation and drive digital transformation in factories. The programme covers fundamental concepts, key technologies, technology demonstrations, and practical applications, with modules in Digital Manufacturing, Industry 4.0, AI/ML, IoT & Digital Twin, AR/VR/MR/Haptics, Robotics and Autonomous Systems, Electronics and Mechatronics, Additive Manufacturing, Design for Additive Manufacturing, and Cybersecurity.

## MANUFACTURING IS CHANGING. BUILD THE CAPABILITIES TO CHANGE WITH IT

Modern manufacturing is evolving through connected systems, intelligent automation, data-driven decisions, and digital production. This programme helps professionals understand and apply key technologies driving this transformation—from AI and IoT to robotics, digital manufacturing, and smart factory systems.

## BUILT FOR PROFESSIONALS DRIVING MANUFACTURING FORWARD

### MID-LEVEL ENGINEERS

Professionals with 3 to 15 years of experience looking to build Industry 4.0 capabilities.

### INDUSTRY 4.0 ASPIRANTS

Professionals seeking practical exposure to emerging manufacturing technologies.

### MSMEs

Technical professionals looking to understand and adopt digital manufacturing technologies.

### MANUFACTURING & ALLIED SECTORS

Professionals working across the manufacturing, automotive, aerospace, and industrial sectors.

### STARTUPS & EARLY-CAREER PROFESSIONALS

Selected participants working on manufacturing, industrial technology, and IoT applications.



# Learn From Experts Across Manufacturing & Emerging Technologies.

Gain insights from IISc faculty expertise in digital manufacturing, AI, robotics, IoT, additive manufacturing, and emerging technologies, with research-led perspectives on the future of modern manufacturing.



## EXPLORE THE TECHNOLOGIES SHAPING MODERN MANUFACTURING

A multidisciplinary curriculum designed to build practical Industry 4.0 capabilities across digital manufacturing, intelligent systems, automation, and advanced production technologies.

## LEARN WHERE RESEARCH MEETS REAL-WORLD MANUFACTURING

### Research-Led Learning

Participants gain insights from faculty actively involved in nationally & internationally recognized research, ensuring the curriculum reflects the latest technological developments.

### Smart Factory Exposure

The curriculum has been designed to remain relevant to current manufacturing challenges and expose participants to knowledge that can be applied in their organizations.

### Expert Interactions

Curriculum delivered by distinguished faculty engaged in leading research at national and international levels.

### On-Campus Immersion

Take your learning beyond the LMS through practical experiences at IISc.

# A STRUCTURED PATH INTO MODERN MANUFACTURING

A multidisciplinary learning experience combining structured online education, practical learning, laboratory exposure, and on-campus immersion at IISc.

## IDEAL FOR

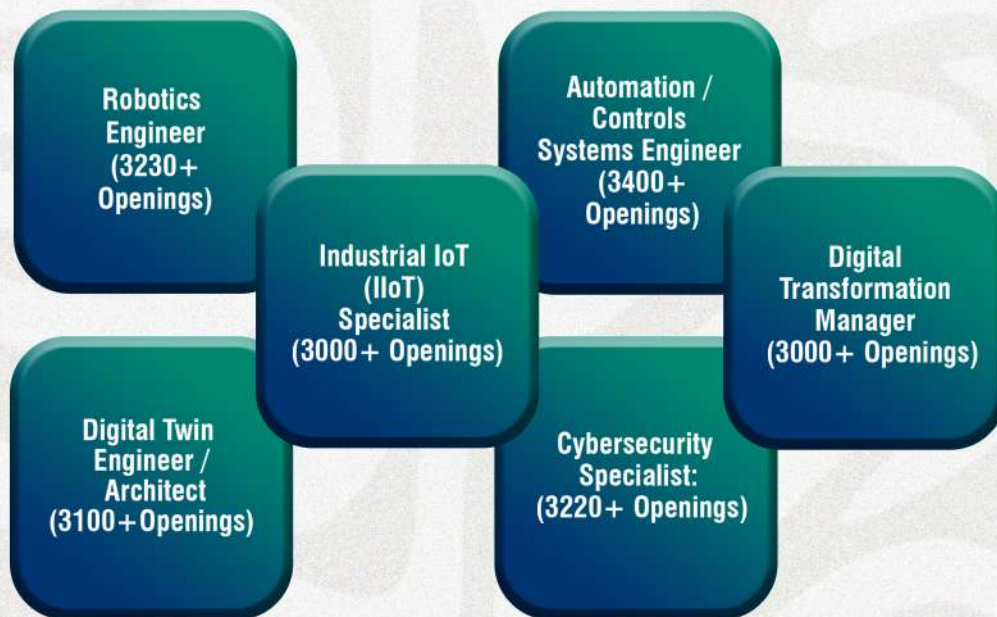
Designed for manufacturing professionals in strategic and managerial roles, as well as professionals working across IoT, product design, materials, mechanics, and system design in sectors such as automotive, aerospace, FMCG, pharma/medical equipment, energy, metals and mining, and oil and gas. The program is also ideal for professionals exploring digital manufacturing and smart factory applications, along with those looking to transition their careers and build expertise in Industry 4.0. It is an online programme with exclusive campus immersion visits for an enhanced learning experience.



# GLOBAL DEMAND FOR INDUSTRY 4.0 PROFESSIONALS

The global Industry 4.0 market is valued at approximately \$210 to \$303 billion and is projected to surge past \$1 trillion early into the next decade, expanding at a compound annual growth rate (CAGR) of roughly 17% to 23% as smart manufacturing and automation accelerate.

*(as per the new market reports from [www.marketsandmarkets.com](http://www.marketsandmarkets.com))*



\*Source : Data adapted from the Mordor Intelligence Industry 4.0 Market Report

## REAL-WORLD CURRICULUM

### DIGITAL MANUFACTURING

- CAD and CIM
- Computational Metrology, Factory Simulation

### INDUSTRY 4.0 FUNDAMENTALS

- Frameworks and Technologies
- Protocols and Standards

### 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 System

## **ADDITIVE MANUFACTURING**

- Polymer Additive Manufacturing
- Metal Additive Manufacturing

## **DESIGN FOR ADDITIVE MANUFACTURING**

- Shape, Metal and Product Representation; Topology Optimization
- Design Principles, Rules and Guidelines For Additive Manufacturing

## **CYBERSECURITY**

- Concepts and Technologies
- Protocols and Standards

# PROFESSIONALS/FACULTY

The curriculum is taught by the highly acclaimed faculty of IISc, bearing prestigious academic accreditation from premier institutions and trained in the best laboratories around the world.



## **Prof. AMARESH CHAKRABARTI**

Programme Coordinator  
Ph.D., University of Cambridge, UK

Senior Professor & Chair, Department of Design and Manufacturing, IISc. He is a globally recognized researcher with 370+ peer-reviewed publications, 39 books, 13 patents, and multiple international research awards. His expertise spans Design Synthesis, AI & Data Analytics, Eco-Design, Product Informatics, Smart Manufacturing, and Biomedical Devices.



## **Prof. B GURUMOORTHY**

Programme Faculty  
Ph.D., Carnegie Mellon University, USA

Senior Professor, Department of Design & Manufacturing, IISc, with expertise in Computer-Aided Design, Digital Manufacturing, Computational Metrology, Product Informatics, Computer-Aided Prototyping, and Product Design. He has 6 patents, with technologies developed in his lab licensed and actively used by industry, and serves as Vice-Chair, Asia-Pacific, IFIP WG 5.1.



## **Dr. ABHIJIT BISWAS**

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

Assistant Professor, Department of Design & Manufacturing, IISc, with expertise in Electronics, Power & Embedded Systems, Sensors/Actuators, Control, Haptics, Biomedical Engineering, Mechatronics, Robotics, IoT, and Renewable Energy. His research focuses on Biomedical & Manufacturing Engineering, Electronics, Instrumentation, and Smart Systems.



## **Dr. RINA MAITI**

Programme Faculty  
Ph.D., Biomedical Engineering, IIT Bombay

Assistant Professor, Department of Design & Manufacturing, IISc, and Faculty-in-charge of the Human Engineering Research Laboratory, with expertise in Human Factors, Biomechanics, Product Design, Medical & Rehabilitation Engineering, Occupational Health & Safety, Biosensors, Medical Instrumentation, and Work & Sports Engineering. She holds 2 patents and focuses on human-centred engineering and healthcare technologies.



## **Prof. KOUSHIK VISHWANATHAN**

Programme Faculty  
Ph.D., Industrial Engineering, Purdue University, USA

Associate Professor, Department of Mechanical Engineering & Associate Faculty, DM, IISc, with expertise in Advanced Manufacturing, Metal Additive Manufacturing, Experimental Mechanics, Metrology, and Theoretical Mechanics & Physics. His lab develops DED-based technologies and advanced processes in fracture, fragmentation, and rapid solidification.



## **Prof. SATYAM SUWAS**

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

Senior Professor of Materials Engineering, Dean of Mechanical Sciences & Associate Faculty, DM, IISc, with expertise in Processing-Texture Relationships, Deformation & Thermo-Mechanical Processing, Microstructure-Mechanical Property Correlation, and Additive Manufacturing. He leads the Laboratory for Texture and Related Studies, has 5 patents, and is among the global top 2% researchers.



### **Dr. THULASI RAMAN K H**

Programme Faculty

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

Integrated Programme Lead, Centre of Excellence for Additive Manufacturing, IISc, with expertise in Additive Manufacturing, Electron Beam & Plasma Processing, Material Processing Systems, Thin Films, Surface & Interface Analysis, Process Monitoring, and Plasma Electrolytic Polishing. He also leads Process Engineering, Vacuum Technology, Equipment & Plant Design, and Advanced Manufacturing Technologies.



### **Prof. ASHITAVA GHOSAL**

Programme Faculty

Ph.D., Stanford University, USA

Senior Professor, Mechanical Engineering & Associate Faculty, DM, IISc, specializing in Robotics, Kinematics, Dynamics, Control, Parallel Mechanisms, Mechanical Systems, Bio-medical Devices, and CAD/CAM. He has 5 patents and 175+ publications and is a Fellow of INAE.



### **Dr. HARESH DAGALE**

Programme Faculty

M.Sc., Engineering, IISc

Principal Research Scientist, DESE, IISc, with expertise in Embedded Systems, TCP/IP & Wireless Networking, VoIP, Audio-Video Streaming, Cyber-Physical Systems, Security, Reliability, and IoT. He focuses on IoT solutions for Healthcare and SmartGrid applications.



### **Prof. G K ANANTHASURESH**

Programme Faculty

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

Senior Professor & Associate Faculty, IISc, with expertise in Compliant Mechanisms, Design & Topology Optimization, Mechanisms & Kinematics, MEMS, Biomechanics, Micro-manipulation, and Protein Design. He heads the M2D2 Lab, is a Shanti Swarup Bhatnagar Award recipient, and among the global top 2% researchers.



### **Prof. VISHAL SINGH**

Programme Faculty

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

Professor, Department of Design & Manufacturing, IISc, with expertise in BIM, Digitalization, Industry 4.0, Smart Manufacturing, Design Computing, Productization, Modular Construction, and Product-Service Systems. His research focuses on Built Environment, Multi-disciplinary Collaboration, Systemic Innovation, and Design Cognition.



### **Dr. T V PRABHAKAR**

Programme Faculty

Ph.D., Technical University of Delft, The Netherlands

Chief Research Scientist, DESE, IISc & PI, MSME Centre of Excellence, with expertise in Networked Embedded Systems, Energy-Harvesting Sensors, IoT, Hardware Design, and Power Management. He leads Zenlab, developing embedded systems for Industrial IoT, Air Quality, Tactile Internet, AIoT, and Smart Applications.



### Prof. CHANDRAMANI SINGH

Programme Faculty  
Ph.D., IISc

Associate Professor, Department of ESE, IISc, with expertise in Communication Networks, Game Theory, Stochastic Control, and Learning. He has research experience at INRIA Rocquencourt and the University of Illinois Urbana-Champaign, USA.



### Prof. MANISH ARORA

Programme Faculty  
Ph.D., University of Twente, The Netherlands

Associate Professor, Department of Design & Manufacturing, IISc, with expertise in Cavitation, Biomedical Devices, and Multi-Material Additive Manufacturing. He leads the UTSAAH Lab focused on affordable medical technologies and has 100+ research publications and patents, with prior experience at Oxford, GE Global Research, and NTU.



### Dr. ABHRA ROY CHOWDHURY

Programme Faculty  
Ph.D., National University of Singapore

Assistant Professor at the Department of Design and Manufacturing, IISc. Prior to joining IISc, Dr. Roy Chowdhury was a Senior Research Fellow in Autonomous Mobile Robotics with the Temasek Labs at Singapore University of Technology and Design (SUTD). He also worked as a Senior Engineer at Product Platform Hub, LG Electronics India. At IISc, he leads the Robotics Innovations Lab (RIL). His research includes mechatronics, bioinspiration, and biomimetics, and focuses on robotics, automation, and human-robot collaboration.

## PARTICIPANT PROFILE

400+ professionals with an average industry experience of 15+ years have been trained in such programmes conducted by IISc faculty in the past.

## FROM TOP ORGANIZATIONS

|            |                                                                                     |           |                            |                                                                                       |           |
|------------|-------------------------------------------------------------------------------------|-----------|----------------------------|---------------------------------------------------------------------------------------|-----------|
| CYIENT     |  | DOVER     | ERICSSON                   |  | Deloitte. |
| OLA        | SAP                                                                                 | DIAGEO    | SIEMENS                    | esi                                                                                   | Flipkart  |
| Ford       | genpact                                                                             | HCL       | Hewlett Packard Enterprise | IBM                                                                                   | Infosys   |
| JOHN DEERE |  | accenture | ATS                        | BOSCH                                                                                 | Capgemini |

# EVERYTHING YOU NEED TO KNOW BEFORE YOU APPLY

## WHY BUILD EXPERTISE IN DIGITAL MANUFACTURING NOW?

The rapid adoption of technologies such as AI, IoT, robotics and connected systems is making manufacturing increasingly intelligent and data-driven. Building expertise in Digital Manufacturing helps professionals understand and contribute to this transformation.

## WHAT MAKES THIS PROGRAMME DIFFERENT?

The programme brings together 10 industry-focused modules covering Digital Manufacturing, AI/ML, IoT, Digital Twin, Robotics, Additive Manufacturing, Cybersecurity and other Industry 4.0 technologies. It also includes hands-on learning, laboratory visits and expert interactions.

## WHO IS THIS PROGRAMME DESIGNED FOR?

The programme is designed for freshers as well as mid-level engineers with 3–15 years of experience, manufacturing professionals, MSMEs and Industry 4.0 aspirants. Selected startups and early-career professionals may also participate.

## WHAT KIND OF ROLES CAN DIGITAL MANUFACTURING PROFESSIONALS EXPLORE?

Digital Manufacturing skills can support roles across areas such as digital manufacturing, smart factory engineering, industrial engineering, manufacturing systems and Industry 4.0 implementation.

## DOES THE PROGRAMME INCLUDE PRACTICAL LEARNING?

Yes. The programme includes hands-on learning, laboratory visits and expert interactions designed to connect concepts with practical manufacturing applications.

## WHAT AREAS WILL I LEARN ABOUT?

The programme covers Industry 4.0 Fundamentals, Digital Manufacturing, Electronics & Mechatronics, AI/ML & Analytics, IoT & Digital Twin, AR/VR/MR/Haptics, Robotics & Autonomous Systems, Additive Manufacturing, Design for Additive Manufacturing and Cybersecurity.

## PIONEERING TOMORROW'S MANUFACTURING LANDSCAPE

The global Industry 4.0 market is experiencing a profound capital influx. The table below outlines the multi-year valuation trajectory, expanding at a 20.26% Compound Annual Growth Rate (CAGR):



Publisher: Mordor Intelligence

## ENROLMENT PROCESS



## ELIGIBILITY

### MINIMUM QUALIFICATION

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

### INDUSTRY EXPERIENCE REQUIRED

Freshers with a keen interest in learning can apply too.



## CONTACT US

**Centre For Continuing Education**  
Indian Institute of Science,  
Bengaluru 560 012,  
Karnataka, India

## APPLY HERE

☎ 080 2293 2055 / 2247 / 2491

✉ [office.cce@iisc.ac.in](mailto:office.cce@iisc.ac.in)

For more information check the link below:

<https://cce.iisc.ac.in/courses/advanced-certification-programme-in-digital-manufacturing/>

