



# Online Programme

On

## Introduction to Robotics



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[meity.gov.in/content/schemes-projects](http://meity.gov.in/content/schemes-projects)

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**Objective (Electronics & ICT Academy-Phase II)**  
1) To conduct specialized FDPs for faculty/mentor training in line with the vision of MeitY by promoting emerging areas of technology and other high-priority areas that are pillars of both the "Make in India" and the "Digital India" programs.  
2) To promote synergy and collaboration with industry, academia, universities and other institutions of learning, especially in emerging technology areas.  
3) To support the National Policy on Electronics 2019 (NPE 2019) which envisions positioning India as a global hub for ESDM sector, including MeitY Schemes/policies such as Programme for Semiconductors and Display Fab Ecosystem; India AI; National Programme on AI, Production Linked Incentive Scheme for IT Hardware & Large-Scale Electronics Manufacturing; EMC; SPECS; Chips to System (C2S); etc.  
4) To promote standardization of FDPs through Joint Faculty Development Programmes.

5) To support the vision of the National Education Policy (NEP 2020), which mandates that Indian educators go through at least 50 hours in professional development programmes per year.  
6) To design, develop & deliver specialised FDPs on emerging technologies/ niche areas/ specialised modules for specific research areas for Faculty in Higher Education Institutions (HEI), besides FDPs on multi-disciplinary areas connected with ICT tools and technologies and other digital hybrid domains, covering a wide spectrum of engineering and non-engineering colleges, polytechnics, ITIs, and PGT educators.

An intensive 40 Hours Training Programme in online mode is being organized for faculty and doctoral students of engineering and technological institutions. It is also open to working professionals from industry/organizations. The main theme of training program will be oriented around exploring the state of the art methods for Introduction to Robotics.

**Experts/Speakers-** A blend of academic excellence from IITs, NITs, and IIITs, together with practical perspectives from industrial leaders.

### Programme Modules:

**Module 1:** Anatomy & Motion (The Body): Robot Classification: Understanding the "Big 4"—Industrial manipulators, Mobile robots (AMRs), Humanoids, and Drones, Degrees of Freedom (DoF): Analyzing joint types (revolute vs. prismatic) and the workspace envelope, Actuators & End-Effectors: Selecting motors (DC, Stepper, Servo) and specialized grippers for diverse task

**Module 2:** Sensing & Perception (The Senses) Sensor Integration: Implementing ultrasonic, IR, and IMU (Inertial Measurement Unit) sensors for environmental awareness, Computer Vision Basics: Introduction to object detection and spatial mapping using depth cameras and LiDAR, Feedback Loops: Understanding how encoders and sensors allow for precision through "closed-loop" control,

**Module 3:** Intelligence & Control (The Brain), Programming Paradigms: Comparative look at Python-based control and block-based logic for rapid prototyping, The Robot Operating System (ROS 2): Navigating the industry-standard middleware for robot communication, Generative AI in Robotics: Using Natural Language to instruct robots and automate complex path planning

**Module 4:** Collaboration & Deployment: Cobot Safety: Learning "Power and Force Limiting" (PFL) to allow humans and robots to share a workspace safely, Digital Twins: Using simulation environments (like NVIDIA Isaac or Gazebo) to test robot behavior before physical deployment, Ethics & Future Trends: Discussing the social impact of automation and the rise of "Robotics as a Service" (RaaS).

### Programme Coordinators:

Prof. Lava Bhargava, Jt-PC	fdp.academy@mnit.ac.in	9549654231 (M)
Dr. Gagan Deep Meena, NIT Patna, Jt-PC	Prof. Vijay K Gupta, IIITDM Jabalpur, PC	Prof. Sanjeev Manhas, IIT Roorkee, Jt-PC
Prof. Tanuja Sheorey, IIITDM Jabalpur, Jt-PC	Dr. B C Sahana, NIT Patna, Jt-PC	

### Registration:

Registration is open to faculty, working professionals, industry persons, doctoral, postgraduate and graduate students from India and rest of the world. Participants will be admitted on first-come first-served basis. Register online at—  
<http://online.mnit.ac.in/eict/>



### Registration Fee:

Mode of programme	Academia (faculty/Students): India/SAARC/Africa	Others: India/SAARC/Africa	Rest of the world
Online	Rs. 500/-	Rs. 1000/-	US \$ 60/-

- (A) Fee once paid will not be refunded back.
- (B) The fee covers online participation in the programme, tutorial notes and examination, certification charges etc.
- (C) The registration amount may be paid through online mode - NEFT / UPI / Cards / SWIFT, provided at the registration portal.
- (D) Detailed schedule will be shared after receiving registration form.  
→ For queries, email us at [fdp.academy@mnit.ac.in](mailto:fdp.academy@mnit.ac.in)

**MNIT Jaipur** one of the oldest NITs, the institute has a rich heritage of sixty years producing world class engineers, managers, architects and scientists. Ranked 43rd nationally in the NIRF ranking-2024 (Engineering), the institute offers learning opportunities for undergraduate, postgraduate students, and researchers in various domains. Having a lush green campus of over 317 acres within the heart of the pink city, close to Jaipur International Airport, the campus offers a safe and lively environment. A world class teaching infrastructure, state-of-art laboratories welcome you at the campus. The institute has a vision to impart education of international standards and conduct research at the cutting edge of technology.