AI AND ROBOTICS

INTRODUCTION

To provide participants with a foundational understanding of artificial intelligence and robotics concepts, including programming basics, machine learning, sensors, and ethical considerations, empowering them to grasp how AI and robotics function and their applications in the real world.

Module 1: Introduction to AI and Robotics

This module introduces the foundational concepts of Artificial Intelligence and Robotics. Learners will explore how these technologies differ, how they are connected, and their growing relevance in today's world. Real-world examples and a brief history will help establish a clear understanding of their evolution and future trends.

Module 2: Basics of Robotics

Students will learn about the key components of a robot, including sensors, actuators, and controllers. The module explores how these parts work together to create functional machines. It also explains different types of robots and their common uses in industries, healthcare, and everyday life.

Module 3: Introduction to Programming Concepts

This module focuses on programming basics essential for robotics, such as logic, loops, and commands. Learners will be introduced to user-friendly platforms like Arduino and Raspberry Pi. These tools will help them understand how coding controls robotic behavior.

Module 4: Fundamentals of Machine Learning

Students will understand the concept of Machine Learning and its importance in making robots "learn" from data. Simple, relatable examples will demonstrate how machines adapt over time. The module will set the foundation for more advanced AI applications in robotics.

Module 5: Sensors and Feedback in Robots

This module explains how robots use sensors to perceive their environment and make decisions. Learners will discover various types of sensors like infrared, ultrasonic, and touch. Real-world examples will show how feedback systems improve robot performance and accuracy.

Module 6: AI in Robotics, Perception & Decision Making

Here, students will explore how robots process visual and environmental data to navigate and respond. The module introduces basic pathfinding algorithms used in autonomous systems. It emphasizes how AI enables robots to make intelligent decisions.

Module 7: Human-Robot Interaction

Learners will study how robots interact with humans through speech, text, and gestures. The basics of Natural Language Processing (NLP) and voice recognition will be introduced. Students will see how this technology powers tools like chatbots and voice assistants.

Module 8: Ethics and Social Impact

This module explores the ethical challenges in using AI and robotics, including privacy and job displacement. Students will discuss how these technologies can be used responsibly. Real-world scenarios will be analyzed to understand both the benefits and risks.

Module 9: Review & Future Directions

The final module revisits key topics covered throughout the course to reinforce understanding. Students will reflect on what they've learned and discuss their ideas and questions. Emerging trends and future possibilities in AI and robotics will also be explored.

Career Scope: AI and Robotics

AI and Robotics offer transformative career opportunities across industries such as healthcare, manufacturing, space research, agriculture, logistics, and education. Learners can pursue roles like AI Engineer, Robotics Programmer, Automation Specialist, Data Scientist, or Machine Learning Developer. With the rise of intelligent systems and Industry 4.0, demand for skilled professionals in AI-driven solutions is rapidly increasing. This field also opens pathways in research, product design, and ethical AI policy-making. Whether building autonomous vehicles or creating smart assistants, students with strong foundations in AI and Robotics are positioned to lead innovation and solve real-world challenges in tomorrow's digital world.

Salary Package: AI and Robotics Careers

Entry-level professionals in AI and Robotics can expect a starting salary ranging from ₹4.5 to ₹8 LPA in India, depending on skills, certifications, and employer. With 3–5 years of experience, mid-level roles like AI Developer, Robotics Engineer, or Data Analyst may earn between ₹10 to ₹20 LPA. Globally, salaries are significantly higher, with roles in the US or Europe often offering $80,000 to $150,000+ per year.

As demand rises across sectors, professionals with hands-on expertise in automation, machine learning, and smart systems are among the most sought-after and well-compensated.