

Fundamentals of Robotics



Level 1

Today and in the future, robots are becoming increasingly prevalent in various industries. They are used for everything from repetitive tasks to complex interactions with humans. This certification is designed to introduce students to different types of robots and how they can enhance productivity in industrial applications. While robots can take over low-skilled tasks, they still require skilled individuals to program, operate, and maintain them.

Upon completing this certification, students will have hands-on experience with various types and brands of robots. They will learn how to program robots, teach positions, and work safely with these essential elements of modern industry.

Industry Recognized Certification Topics

- Introduction to industrial robotics
- Robotics and work place safety
- Kinematics and dynamics of motion and forces in robotic systems
- Familiarization with various robots types
- Robot programming languages
- Point-to-point and task programs
- Program editing
- Control overview
- Industrial applications
- Troubleshooting and maintenance
- Calibration and accuracy
- Human-Robot Interaction

Units - 6 / Labs - 3 / Projects - 3

Industry Recognized Certification Competencies

- Identify and explain the design and function of various types of robotic systems
- Safely operate and maintain robotic systems
- Program various robotic systems
- Commission and teach robotic programs and positions
- Understand and define control instructions
- Utilize conditional statements
- Troubleshoot and diagnose robotic systems
- Understand the fundamentals of robot kinematics and dynamics
- Understand the various types and uses of end effectors
- Optimize robot paths and movement
- Utilize simulation and offline programming tools
- Understand network and communication protocols
- Implement human-robot collaboration
- Analyze and improve robotic system performance
- Incorporate sensors and other applications with a robot application

