

# ROBOTICS FUNDAMENTALS

eLearning courses designed to increase productivity and profits



## Learning made Simple, Visual, and Interactive

The advancements in the field of robotics have enhanced the working conditions for humans and increased productivity in the manufacturing, military, and service industries. Explore the world of robotics through the THORS Robotics Fundamentals Course. The course introduces the learners to the structure, the design, the components, and the classification of robots, in addition to providing a comprehensive understanding of industrial robots and robotic technology.

Credit Hours **2.5**

## Learning Objectives

- Define the importance of robots and the field of robotics.
- Understand the basic anatomy of robots.
- Identify the mechanical structure of robots.
- Examine the different components of the electrical system including actuators and sensors.
- Explain the different ways robots are programmed and controlled to perform various tasks.
- Classify robots based on design, locomotion, application, control, and special features.

## Table of Contents

### I. Anatomy of Robots

- **Mechanical Structure**
  - o Manipulator
  - o End Effectors
- **Electrical System**
  - o Actuators
  - o Sensors
- **Control System**
  - o Processing Unit
  - o Interface

### II. Robot Classification

- **Classification by Design**
  - o Serial Robots
  - o Parallel Robots
- **Classification by Locomotion**
  - o Stationary Robots
  - o Non-Stationary Robots
- **Classification by Application**
  - o Industrial Robots
  - o Military Robots
  - o Service Robots
- **Classification by Control**
  - o Teleoperated Robots
  - o Autonomous Robots
- **Special Types of Robots**
  - o Unmanned Robotic Vehicles
  - o Cobots
  - o Microrobots and Nanorobots

