

# Embedded Systems and Mobile Robotics

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## Overview

This course covers interfacing of different critical input/output devices with controller and subsequently progress towards designing and programming of mobile robot to execute different tasks.

## Participant profile

- Any diploma/degree engineering students

## Course contents

- Microcontroller overview
- Input/output device interfacing
- Analog signal processing
- Interrupt programming
- Timers/counters programming
- PWM signal, speed control, position control
- Serial communication
- Mobile robot designing and programming
- Mobile robot path planning
- Robot linear and rotational motion control
- Tele-operation
- Holonomic drive realization

## Objectives

After the completion of the course, the participant will able to understand/perform the following:

- Able to interface different sensors, switches, relays, motors, devices like; Bluetooth, RF transmitter/receiver, etc to design different embedded system projects.
- Able to design and program mobile robot to realise path follower, maze solver, tele-operated robot, mobile robot linear and rotational motion control using encoder, holonomic drive realization, etc.

## Prerequisite

- Basic knowledge of different electronics and electrical components.
- Basic C/C++ programming.

## Evaluation

- Quiz
- Theory and practice exam
- Experiential learning project

## Teaching & learning media

- Multi-media presentation
- Live project demonstration

## Time duration

- 36 Hours
- 6 Hours/Day

## Fee

- Rs 5500/-