

## Automated Railway Crossing

### What is this course about?

In this course, you will make an automated railway crossing model to understand real application of embedded systems. Here's how it works:

- Sensors detect train arrival and departure and send appropriate signals to microcontroller
- Microcontroller is programmed to operate motorized railway gates as per sensor input

This project solves a real problem - accident risks at unattended railway crossing. So the learning experience from this course will improve your problem-solving skills in engineering.

### Topics to be covered:

#### **Module 1:** What is Automation?

Automation

Smart traffic management systems

How automated level crossing works?

#### **Module 2:** How to detect an object?

Sensors

How digital sensor works?

#### **Module 3:** Brain of the system

Working of a Microcontroller

Structure of a Microcontroller

Development Board Schematic

#### **Module 4:** Motors

Motors and Motor Drivers

Working of a DC Motor

Checking the working of the Motors

#### **Module 5:** Programming and flashing the code

Number Systems - Binary & Hexadecimal

Port Reference using Hexadecimals

Masking

Delay Logic

Programming

Program for automation

Instruction Set to Machine Language

Instruction Set to Machine Language

Flashing the Code onto the Microcontroller

#### **Module 6:** Prototype design of automated

railway crossing

Connection and Assembling

Test your system

### Hardware Kits

Automated Railway Crossing Course Kit contains the following items:

- Development Board

- Digital IR Sensors
- Gears
- Connecting Wires
- USB-ASP Programmer
- DC Motors
- Motor Clamps

**Eligibility**

Anybody interested in Embedded Systems can enroll for this course

**Fees:** Rs. 1,500/- per head. Kit will be given in a group of 5 students.