

TECHNO  
GRAVITY  
SOLUTIONS

# INTO



## INTO – Industrial Automation

### Description



Industrial automation is a wide subject with varied specializations. This course introduces a student to Industrial automation in a very basic yet practical oriented manner.

We venture into theories of industrial automation for some time. Then we take two classic examples – Conveyor belt system and Robotic arm, which are widely used in many industries.

We learn to develop such systems practically. Embedded systems are a major part of such a project. To add more weight to individual interpretations and understanding, we also include 2D Designing.

Robotic arm is the most widely used industrial robot / robotic device. It is used in variety of applications like pick-up and place, machine soldering, welding, forging etc. There are many industrial processes which are carried out using a Robotic arm.

Well the arm can be manually operated or autonomously operated. Here we learn both kinds of operations of arm; more prominently an autonomous robotic Arm because of industrial requirement. Additionally programming an Arm will give a superior learning experience.

Arms can use servo or stepper motors. We will use both types of motors which although are costly, but give tremendous usability. Programming a servo motor is something new that you will learn and implement.

In this course we thereby create and operate a prototype ARM with a conveyor belt system. We will also get an insight on various other operational methods. This course also involves engineering drawing and its implementation.

Many final year engineering project topics consist of these; and if we introduce these as a subject in one of the preceding semesters it will add core value to learning and project development. Thus higher level projects can be opted hereafter.

This course will become a benchmark for upgrading your hardware system understanding & programming skills to design & develop higher and complex applications.

## Course contents



1. Smart-e Board
2. Embedded C Programming
3. Interfacing components
4. Industrial Automation
5. Conveyor Belt Systems
6. Concept of Robotic Arm
7. Servo Motors
8. Arm Designing
9. Using sensors
10. System Design

## Duration



48 hrs. in total for the workshop.  
Includes 8 hrs. of internship @ TGS.

Theory : Practical = 30 : 70

12 days X 4 hrs. per day i.e. 12 sessions in all.

## Kit contents



- |                                 |    |
|---------------------------------|----|
| 1. Smart-e Board                | 1x |
| 2. Serial Cable                 | 1x |
| 3. Servo Motors                 | 3x |
| 4. DC Motors                    | 4x |
| 5. IR Sensors                   | 2x |
| 6. Arm Chassis – discrete parts | 1x |
| 7. Battery                      | 1x |
| 8. Charger                      | 1x |
| 9. Accessories                  | 3x |
| 10. Manual + CD                 | 2x |