



# VIRTUAL ROBOTICS **INTERNSHIP**

## GRADE 6-8



### COURSE HIGHLIGHTS !

- Live 48 Hours of Sessions
- Detailed coverage of fundamentals of Arduino (C++) programming language
- Basic knowledge of electronics & learn to design your circuits
- Understanding the working of robotic brain
- Interfacing various sensors & hardware's
- Robotics Concepts
- Understanding Errors & its types, Debugging the errors
- Understanding Digital & Analog Signals
- **BUILD 7 REAL LIFE PROJECTS**



Book your  
**FREE Demo now!**

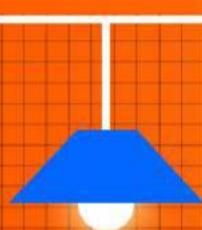


## COURSE REQUIREMENTS

- Basic knowledge of Block-Based Programming Required
- Basic knowledge of circuit
- A Mac or Windows PC computer/Laptop
- Access to the internet



## WHAT YOU'LL LEARN IN THE COURSE



The Arduino Platform &  
C Programming



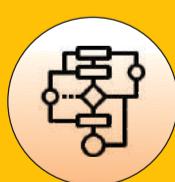
3D Designing



Interfacing various Sensors such as  
Ultrasonic, Temperature, Gas etc.



Interfacing Actuators such as  
DC motor, Servo Motor,  
Buzzer, Displays etc.



Flow control of Program  
& Algorithm

## Introduction to the Breadboard

Basic Electronics Concept • Division of Breadboard • Correct way of connection •



START



TINKER CODERS  
BEYOND CODING

Beginner

Grade 6-8



### Bright up

- Working principle of LED
- Led connection on breadboard

## Introduction to Arduino Programming

Microcontroller & Microprocessor concept • What is Arduino • Concepts of Arduino Programming •



### Alternate LED Flashing

- Led circuit with Arduino • Syntax of Arduino Programming
- Controlling Led digitally

## Controlling lights

- Introduction to switch • Input & Output Relation
- Concept of Conditional statement



### Controlling brightness of light

- Introduction to Potentiometer (regulator)
- Mapping Concept • Introduction of serial monitor



### Disco Colors

- Introduction RGB led
- How to mix colors



### Number Counter

- Arrangement of segment
- Types of 7 segment display
- Understanding of function

## Digital Dice

Random function concept • Getting Random Outcomes •



## Microwave temprature indicator

- Indicator concept • Introduction of Sensor
- Working of Temperture sensor



## Controlling fan

- Understanding Motor • Controlling Dc motor
- How to use motor driver(L293d)

## Rotating CCTV camera

- Introduction of servo motor
- Controlling position



## Smart Street lamp

- Understanding Analog Read
- Light dependent controlling



## Print your message on LCD

- Intorduction of libraries
- Working of LCD • Display message on LCD



## Digital Distance meter

- How bat navigates
- Working of distance sensor (Ultrasonic sensor)
- Display distance on LCD



Intermediate

Grade 6-8

## Fading lamp

- Understanding Analog Write concept
- How to read Voltage
- Converting analog to digital



## Rainbow Lights

- Use of PWM Concept
- Understanding rainbow effect



## Smart Parking System

- Understanding safety system
- Making Alram system
- Setting distance range



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## Score Board

- Understanding Logical concept
- Mathematical Implementation
- How to change score



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## Visitor Counter

- Measurement of the visitor traffic
- Placement of sensor
- Adjusting Range of sensor

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## Voting Machine

- How evm machine work
- Display Input value on lcd
- Concept of Increment



## Blind Stick

- Problem of blind people
- Concept of obstacle
- How to avoid obstacle
- How to use vibrator motor



## Height measuring device

- Conversion of units
- Measuring Height by sensor
- Printing Height on lcd



## Automatic door opening system

- Servo control by sensor
- How body emits heat
- Concept of Automatic door



## Temperature Controlled Fan

- Concept of speed control
- Controlling fan according to room temprature

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## Robotic Arm

- Concept of robotic arm
- Concept of human joints
- Controlling each joint of robotic arm



## Password Setup

- Introduction of keypad
- Working of keypad
- Types of keypad
- Getting input of keypad

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## Automatic Hand Sanitizer

- Importance of hygiene
- Touchless dispensing santizer
- Controlling servo with ultrasonic



## Robo Car

- Concept of robot direction
- Introduction Bo motor



## Smart Dustbin

- Automatic dustbin
- Dustbin status



## Remote Control Lights

- Working of IR
- Introduction to tsop
- How remote works



**Piano**

- Concept of different tone • Producing notes
- Making piano

**4 way Traffic Lights**

- How traffic light works • Concept of array
- For loop with array

**LPG Gas leak detector**

- Introduction of gas sensor • Types of gas sensor
- Working of gas sensor • Controlling Output with gas sensor

**Mood lights**

- Introduction of RGB strip • Types of RGB strips
- Introduction of neopixel • Working of RGB strip

**Air Quality monitoring system**

- Introduction of air smoke sensor • Detection of various gases
- Monitoring weather

**Memory Game**

- Concept of array • If else if ladder concept
- Taking input from buttons

**Rock Paper Scissor**

- Random event generation • Output W.R.T input
- Concept of Multi player game

**Tank full Alram**

- Types of indicator • Solution to wastage of water
- Different level indication

**Don't Drink & Drive**

- Road safety measurement • Introduction to Alcohol sensor
- Working of Alcohol sensor

**Obstacle Avoiding Car**

- Sensing the obstacle • How to overcome obsctale
- Path finding robot

**Door Lock**

- Setting a password • Concept of string
- Comparing password

END



## HOW THIS COURSE WILL HELP YOUR CHILD

- **CIC approach**

Consumer to innovator to the creator

This course aims to turn the student from a consumer of technology to the creator of technology.

- **Activity-Based learning**

Learn the required programming concepts by performing activities

- **Project - Based Learning**

Learn the required programming concepts by performing activities

Instead of a theoretical and traditional way of learning, students will build projects during the course.

- **Our PBL approach will help student in**

Allows students to acquire key knowledge & skills through the development of projects that respond to real-life problems

Develop critical thinking

Retain the concept

Integration of different concepts

# COURSE OUTLINE

## Beginner

Session Number	Activity name	Learning Outcome
1.	Introduction to the breadboard.	Basic Electronics Concept, Division of Breadboard, Correct way of Connection
2.	Bright up	Working principle of LED, Led connection on breadboard
3.	Introduction to Arduino Programming	Microcontroller & Microprocessor concept, What is Arduino, Concepts of Arduino Programming
4.	Alternate LED Flashing	Led circuit with Arduino, Syntax of Arduino Programming, Controlling Led digitally
5.	Controlling lights	Introduction to switch, Input & output relation, Concept of Conditional Statement
6.	Controlling brightness of light	Introduction to Potentiometer (regulator), Mapping Concept, Introduction of Serial Monitor
	Decoration Lights	Understanding Loop's, How to use For loop
7.	Disco colors	Introduction RGB led, How to mix colors
8.	Number Counter	Arrangement of segment, Types of 7 segment display, Understanding of function
9.	Digital Dice	Random function Concept, Getting Random Outcomes
10.	Microwave Temperature indicator	Indicator concept Introduction of Sensor Working of Temperature Sensor
11.	Controlling Fan	Understanding Motor Controlling Dc motor How to use motor driver(L293d)
12.	Rotating CCTV Camera	Introduction of servo motor, Controlling position

<b>Session Number</b>	<b>Activity name</b>	<b>Learning Outcome</b>
13.	Smart Street lamp	Understanding Analog Read, Light dependent controlling
14.	Intruder Alarm	Introduction to Passive Infrared Rays, Working principle of PIR Sensor, Detection of motion
15.	Print your message on LCD	Introduction of libraries, Working of LCD, Display message on lcd
16.	Digital Distance Meter	How bat navigates, Working of distance sensor (Ultrasonic sensor), Display distance on LCD

# COURSE OUTLINE

## Intermediate

Session Number	Activity name	Learning Outcome
1.	Fading lamp	Understanding Analog Write concept, How to read Voltage, Converting analog to digital
2.	Rainbow Lights	Use of PWM Concept, Understanding rainbow effect
3.	Smart Parking System	Understanding safety system, Making Alarm system, Setting distance range
4.	Score Board	Understanding Logical Concept, Mathematical Implementation, How to change score
5.	Visitor Counter	Measurement of the visitor traffic, Placement of sensor, Adjusting Range of sensor
6.	Voting Machine	How EVM machine work, Display Input value on lcd, Concept of Increment
7.	Blind Stick	Problem of blind people, Concept of obstacle, How to avoid obstacle, How to use vibrator motor
8.	Height Measuring device	Conversion of units, Measuring Height by sensor, Printing Height on lcd
9.	Automatic Door Opening System	Servo control by sensor, How body emits heat, Concept of Automatic Door
10.	Temperature Controlled Fan	Concept of speed control, Controlling fan according to room Temperature
11.	Robotic Arm	Concept of robotic arm, Concept of human joints, Controlling each joint of Robotic arm
12.	Password setup	Concept of robotic arm, Concept of human joints, Controlling each joint of robotic arm
13.	Automatic Hand Sanitizer	Importance of hygiene Touchless dispensing sanitizer Controlling servo with ultrasonic

Session Number	Activity name	Learning Outcome
14.	Intruder Alarm	Introduction to Passive Infrared Rays, Working principle of PIR Sensor, Detection of motion
15.	Print your message on LCD	Introduction of libraries, Working of LCD, Display message on lcd
16.	Digital Distance Meter	How bat navigates, Working of distance sensor (Ultrasonic sensor), Display distance on LCD

# COURSE OUTLINE

## Advanced

Session Number	Activity name	Learning Outcome
1.	Piano	Concept of different tone, Producing notes, Making piano
2.	4 way Traffic Lights	How traffic light works, Concept of array, For loop with array
3.		
4.	LPG Gas leak detector	Introduction of Gas sensor, Types of Gas sensor, Working of Gas sensor, Controlling Output with gas sensor
5.	Mood Lights	Introduction of RGB strip, Types of RGB strips, Introduction of neopixel, Working of RGB strip
6.	Fire Alarm	Introduction to fire sensor, Detection of fire, Emergency Fire Alarm
7.	Air Quality Monitoring System	Introduction of air smoke sensor, Detection of various gases, Monitoring weather
8.	Memory Game	Concept of array, If else if ladder concept, Taking input from buttons
9.	Rock Paper Scissor	Random event generation Output W.R.T input Concept of multiplayer game
10.	Tank full Alarm	Types of Indicator, Solution to Wastage of water, Different level indication
11.		
12.	Don't Drink & Drive	Road safety measurement, Introduction to Alcohol sensor, Working of Alcohol sensor
13.	Obstacle Avoiding Car	Sensing the obstacle, How to overcome obstacle, Path finding robot
14.		
15.	Door Lock	Setting a password, Concept of string, Comparing Password
16.		



TINKERCODERS

BEYOND CODING



## OTHER COURSES



## **FOR MORE COURSES VISIT:**

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📞 India + 91-99-7119 2244, + 91-74-2836 6266  
📞 USA + 1-914-354-2382