



TINKER CODERS
BEYOND CODING

VIRTUAL ROBOTICS

GRADE 3-5



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!

www.tinkercoders.com



TINKER CODERS
BEYOND CODING



COURSE REQUIREMENTS



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



TINKER CODERS
BEYOND CODING



WHAT YOU'LL LEARN IN THE COURSE



The Arduino Platform &
C Programming



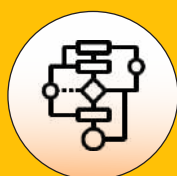
The Arduino Programming &
Hardware Fundamentals



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



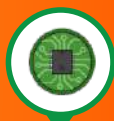
Interfacing Actuators such as
DC motor, Servo Motor,
Buzzer, Displays etc.



Flow control of Program
& Algorithm

Introduction to Breadboard

- Right way doing connection
- Difference in PCB and breadboard



START



TINKERCODERS
BEYOND CODING

Beginner

Grade 3-5



Led Glowing Activity

- Direction of Current flow
- Concept of Potential Difference

LED Glowing Activity with switch

- Fundamentals of Slide Switch
- Working of Slide Switch



LED Brightness Controlling

- Introduction to potentiometer
- Variable Resistor

Door bell Making Activity

- Introduction to Buzzer
- Controlling Buzzer with Switch



RGB LED Glowing Activity

- Introduction to RGB
- RGB Terminals



RGB Glowing Activity with switch

- Controlling RGB



Volume Controller

- Controlling buzzer with potentiometer
- Sound frequencies



Number Display using 7 Segment

- Introduction to Seven Segment Display
- Segment distribution



Number Display using 7 Segment with switch

- Displaying numbers and Alphabets



Automatic light controller

- Introduction to Photoresistor
- Working and Application

Diode

- Introduction to Diode
- Working and Applications in Circuit



Resistors Color Coding

- Fundamentals of Resistor
- Importance of Resistor



How to use a Multimeter

- Introduction to Multimeter
- Applications

Logic Gates(AND-OR)

- Introduction to Logic gates
- Applications



Logic Gates (NOR_NAND)

- Using Various Gates
- Justifying Truth Table

Introduction of Microbit

- Know your Microbit
- What inside Microbit



Faces & Emoji

- Displaying Emoji's over LED Matrix



EMOJI(using buttons)

- Controlling Events Using Button
- Multiple Events control

Countdown Timer

- Creating Variables
- Changing the value of variable



Rock Paper Scissor

- Introduction to conditional Statement
- Using Accelerometer Sensor

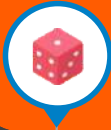
Digital Compass

- Introduction to compass sensor
- Applications



Coin Toss

- Designing LED pattern
- Controlling random Events



Smart Dice

- Using conditional Statement
- Using Accelerometer Sensor

Introduction to Arduino

- Introduction to Arduino
- Insights and Applications of Arduino



Introduction to Sensors and Actuators(Blinking LED)

- Introduction to Sensors and Actuators
- Input and Output

Alternate LED Flashing

- Interfacing LED
- Controlling LED



Controlling LED(Slide Switch/Push button)

- Interfacing Push Button/Slide Switch
- Controlling LED with button input

Controlling Brightness

- Interfacing Potentiometer
- Mapping Analog signal to Digital

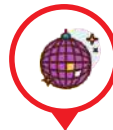


Introduction to RGB

- Interfacing to RGB
- Controlling RGB

Disco Lights

- Applications of RGB
- Creating Multiple Color Hues



Number Display

- Interfacing 7 segment display
- Displaying numbers and alphabets



Theft Alarm(PIR)

- Introduction to PIR sensor
- Working and Applications



Automatic Light

- Introduction to Photoresistor
- Working and applications



Distance Scale(Ultrasonic)

- Introduction to Ultrasonic Sensor
- Working phenomena of Ultrasonic



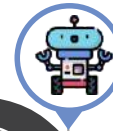
Servo Controlling

- Introduction to Servo motor
- Introduction to Libraries



Robotic Arm(Servo/Pot)

- Importing Libraries



DC- Motor control

- Introduction to DC motor



Tilt Sensor

- Introduction to Tilt sensor
- Working and Application



Sweeping Robot- Project

- Interfacing motor and ultrasonic
- Object avoiding



Piano

- Understanding Sound frequencies
- Electrical energy to Sound



Traffic Light

- Automation in traffic system
- Designing Circuit



Mood Light (Temp sensor)

- Introduction to temperature sensor



Patient monitoring system(Flex sensor)

- Introduction to Flex sensor



Pressure Activated Elevator

- Introduction to force sensor
- Real Life Applications



Fan Controlling(Temp Sensor)

- Interfacing temperature sensor with dc motor



Robotic Car

- Introduction Hobby Gear Motor



Gas Detection

- Introduction to Gas Sensor
- MQ sensors



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.	Introdution to Breadboard	Horizontal and Vertical pins of breadboard Right way doing connection Difference in PCB and breadboard
2.	Led Glowing Activity	Get to know about various Electronics terminologies Direction of Current flow Concept of Potential Difference
3.	LED Glowing Activity with switch	Fundamentals of Slide Switch Working of Slide Switch
4.	LED Brightness Controlling	Introduction to potentiometer Variable Resistor Controlling Brightness of LED
5.	Door bell Making Activity	Introduction to Buzzer Controlling Buzzer with Switch
6.	RGB LED Glowing Activity	Introduction to RGB RGB Terminals Types of RGB
7.	RGB Glowing Activity with switch	Controlling RGB Color Combination in RGB
8.	Volume Controller	Controlling buzzer with potentiometer Sound frequencies
9.	Number Display using 7 Segment	Introduction to Seven Segment Display Segment distribution Types of seven segment Displaying Digits
10.	Number Display using 7 Segment with switch	Displaying numbers and Alphabets Controlling Segments using switch
11.	Automatic light controller	Introduction to Photoresistors Working and Application
12.	Diode	Introduction to Diode Working and Applications in Circuit
13.	Resitors Color Coding	Fundaments of Resistor Importance of Resistor Color Coding of resistor
14.	How to use a Multimeter	Introduction to Multi-meter Applications Measuring Voltage, Current and Resistance
15.	Logic Gates(AND-OR)	Introduction to Logic gates Applications Understanding Truth Table
16.	Logic Gates (NOR_NAND)	Using Various Gates Justifying Truth Table
Project	Piano	

COURSE OUTLINE

Intermediate

Session Number	Activity name	Learning Outcome
1.	Introduction of Microbit	Know your Microbit What inside Microbit Programming with Microbit
2.	Faces & Emoji	Displaying Emoji's over LED Matrix Interfacing External LED
3.	EMOJI(using buttons)	Controlling Events Using Button Multiple Events control
4.	Countdown Timer	Creating Variables Changing the value of variable Using event delay
5.	Rock Paper Scissor	Introduction to conditional Statement Using Accelerometer Sensor Application of Accelerometer sensor
6.	Coin Toss	Designing LED pattern Controlling random Events
7.	Digital Compass	Introduction to compass sensor Applications Direction guide
8.	Smart Dice	Using conditional Statement Using Accelerometer Sensor Creating random outcomes
9.	Introduction to Arduino	Introduction to Arduino Insights and Applications of Arduino Programming with Arduino
10.	Introduction to Sensors and Actuators(Blinking LED)	Introduction to Sensors and Actuators Input and Output Digital Vs Analog
11.	Alternate LED Flashing	Interfacing LED Controlling LED
12.	Controlling LED(Slide Switch /Push button)	Interfacing Push Button/Slide Switch Controlling LED with button input
13.	Controlling Brightness	Interfacing Potentiometer Mapping Analog signal to Digital
14.	Introduction to RGB	Interfacing to RGB Controlling RGB Types of RGB
15.	Disco Lights	Applications of RGB Creating Multiple Color Hues
16.	Number Display	Interfacing 7 segment display Displaying numbers and alphabets Connecting multiple 7 segments
Project	SHOW DATE OF BIRTH	

COURSE OUTLINE

Expert

Session Number	Activity name	Learning Outcome
1.	Theft Alarm(PIR)	Introduction to PIR sensor Working and Applications Interfacing with Arduino
2.	Automatic Light	Introduction to Photoresistor Working and applications Automations of lights
3.	Distance Scale(Ultrasonic)	Introduction to Ultrasonic Sensor Working phenomena of Ultrasonic Understanding Time Distance formula
4.	Servo Controlling	Introduction to Servo motor Introduction to Libraries Working with Loops
5.	Robotic Arm(Servo/Pot)	Importing Libraries Interfacing potentiometer and Servo Controlling Servo using potentiometer
6.	DC- Motor control	Introduction to DC motor Introduction to H-Bridge motor driver Interfacing with Arduino
7.	Tilt Sensor	Introduction to Tilt sensor Working and Application
8.	Sweeping Robot-- Project	Interfacing motor and ultrasonic Object avoiding
9.	Piano	Understanding Sound frequencies Electrical energy to Sound Controlling buzzer with push button
10.	Traffic Light	Automation in traffic system Designing Circuit
11.	Mood Light(Temp sensor)	Introduction to temperature sensor Controlling RGB w.r.t Temperature range
12.	Patient monitoring system(Flex sensor)	Introduction to Flex sensor Working and applications Patient monitoring signs
13.	Pressure Activated Elevator	Introduction to force sensor Real Life Applications Getting Output to serial monitor
14.	Fan Controlling(Temp Sensor)	Interfacing temperature sensor with dc motor Controlling speed of DC motor w.r.t temperature range
15.	Robotic Car	Introduction Hobby Gear Motor Interfacing with Motor Driver IC and Arduino Controlling RPM
16.	Gas Detection	Introduction to Gas Sensor MQ sensors Building an Alert System



TINKERCODERS
BEYOND CODING





OTHER COURSES



FOR MORE COURSES VISIT:

 www.tinkercoders.com

 |  +91 99711 92244 , +91 99711 97744

 info@tinkercoders.com