



# SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited "A++" Grade by NAAC | 12B Status by UGC | Approved by AICTE

[www.sathyabama.ac.in](http://www.sathyabama.ac.in)

SCHOOL OF ELECTRICAL AND ELECTRONICS ENGINEERING  
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### 1.3.3. Value Added Courses 2023-2024

#### **Value Added Course: Arduino and Tinkercad Mastery: From Simulation to Real-World Implementation**

Department of Electrical and Electronics Engineering conducted a Two Weeks Value Added Course on the topic "Arduino and Tinkercad Mastery: From Simulation to Real-World Implementation" from 29.01.2024 to 10.02.2024 in which 36 students have participated. This comprehensive program aimed to equip students with practical skills in utilizing Arduino microcontrollers and Tinkercad simulation tools, bridging the gap between theoretical knowledge and real-world application. The course began with an overview of Arduino microcontrollers and Tinkercad, providing students with a solid foundation on the hardware and simulation platforms. Through Tinkercad, participants engaged in practical simulations to understand the fundamentals of Arduino programming, circuit design, and electronic components. The course delved into Arduino programming languages, enabling students to write, upload, and troubleshoot code for various applications. Practical sessions focused on integrating sensors and actuators with Arduino, allowing students to explore real-world applications such as temperature sensing, motion detection, and more. Transitioning from simulation to reality, the students were guided in implementing their designs on physical Arduino hardware. This hands-on experience enhanced their understanding of challenges related to hardware connections and debugging. The course included a project phase where students collaborated in teams to conceptualize, design, and implement a project using Arduino and Tinkercad. This fostered teamwork, creativity, and problem-solving skills.



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#### Value Added Course Report

Date : 14.02.2024

Name of the Event : Arduino and Tinkercad Mastery: From Simulation to Real-World Implementation

Webinar / FDP / Training /Workshop : Value Added Course

Student level / Faculty level / Both : Student Level

Date : 29.01.2024 to 10.02.2024

Time / Duration of the prog., No of days : Mon to Wed 1.15pm -3.15pm , Thurs to Fri 10.00-12.15 11 Days

Name of the Resource person : Dr. M. Kavitha, Dr.M. Pushpavalli, Dr.P. Sivagami,

Designation & Organization : Associate Professors and Assistant Professors/EEE, SIST.

Resource Person(Students) : Rajesh G, Periyar Selvan N, Sasikumar K, Mohan V, Pretiish R, Partheepan J

Department : III yr EEE, II yr ECE

Contact No and Email id : [kavitha.eee@sathyabama.ac.in](mailto:kavitha.eee@sathyabama.ac.in)/ 9444349679

Event association with any organization : No

If yes means details of organization :

Registration Link : <https://forms.gle/bscckZbf2aJ72317>

Feedback Link : [https://docs.google.com/forms/d/e/1FAIpQLSd1mNgmXMhOrGiexiRNfSrWcyV1cotjC\\_y23ETWwgcgQa7ogbg/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSd1mNgmXMhOrGiexiRNfSrWcyV1cotjC_y23ETWwgcgQa7ogbg/viewform?usp=sf_link)

No of persons registered 36

Total No of participants 36

No of participants from Sathyabama 36

No of participants from outside (National): NIL



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No of participants International : NIL

No of E-Certificate issued 36

Name(s) of convener : Dr.N.M.Nandhidha, Dr.S.Radhika

Name(s) of coordinator : Dr. M. Kavitha, Dr.M.Pushpavalli, Dr.P.Sivagami

Remarks :

Signature of the event coordinator :

Signature of the HOD :

Encl :

1. Event brochure
2. Course Content
3. Participants details
4. Certificate copy
5. Photo copy of the event / screenshot
6. Feedback



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|     |                                                                             |          |
|-----|-----------------------------------------------------------------------------|----------|
| VAC | Arduino and Tinkercad Mastery: From Simulation to Real-World Implementation | Course   |
|     |                                                                             | 32 hours |

#### COURSE OBJECTIVES:

- To provide knowledge of Arduino boards and basic components
- To develop skills to implement various smart system applications

#### Unit 1: Introduction to Arduino and Tinkercad Simulation

4 Hrs

Overview of Arduino platform and its applications -Introduction to Tinkercad for Arduino simulation- Basic components and simulation tools in Tinkercad

#### Unit 2: Getting Started with Tinkercad Circuits and Basic Coding

5 Hrs

Creating and simulating basic circuits in Tinkercad -Writing and simulating simple Arduino code- Understanding the connection between code and simulation-Arduino with Tricolor LED and Push button- Arduino with LCD -Display counter using Arduino -Seven Segment Display

#### Unit 3: Intermediate Tinkercad Projects: Sensor Integration

6 Hrs

Simulating sensor inputs in Tinkercad ; Ultrasonic sensor – Temperature Sensor-Gas sensor- IR sensor- Pulse Width Modulation- Control a DC Motor Speed and Direction -Wireless Connectivity to Arduino- Gas Leakage Detection ( Gas sensor) with GSM Module -Home Automation- Password based Door Locking System

#### Unit 4: Transition to Hardware: Setting Up Your Arduino Kit

8 Hrs

Basics of breadboarding and wiring -Overview of essential hardware components (Arduino board, sensors, actuators) – Human Detection (PIR motion Sensor)- Gas Leakage Detection (Gas sensor)- Obstacle Detection (IR sensor) – Temperature measurement using DHT 11 sensor

#### Unit 5: Hardware Implementation Projects

9 Hrs

Building real-world Arduino projects using physical components - Gas Leakage Detection ( Gas sensor) with GSM Module- Blind Stick - Obstacle Arm Rover- Drone Rover –Street light fault detection-Home Automation- Tyre Pressure Measurement-IOT based smart pulse oximeter-Soil moisture detection system- Health Monitoring system

## **COURSE OUTCOMES:**

**Upon successful completion of this course students should be able to:**

CO1: Understand Arduino Fundamentals

CO2: Apply Tinkercad Simulation for diverse applications.

CO3: Analyze the function of Sensors and Actuators Virtually

CO4: Evaluate the Simulation output through Hardware Implementation

CO5: Design hardware projects incorporating various sensors

CO6: Develop prototype for real time application using Arduino

## **References/Text Books :**

1. Hughes, John M. Arduino: a technical reference: a handbook for technicians, engineers, and makers. " O'Reilly Media, Inc.", 2016.
2. McRoberts, Michael. Beginning arduino. Apress, 2013.
3. [https://spoken-tutorial.org/tutorial-search/?search\\_foss=Arduino&search\\_language=English](https://spoken-tutorial.org/tutorial-search/?search_foss=Arduino&search_language=English)
4. <https://toptechboy.com/arduino-lessons/>
5. Ziemann, Volker. A hands-on course in sensors using the Arduino and Raspberry Pi. Crc Press, 2018.
6. Barhoum, Ahmed, and Zeynep Altintas, eds. Fundamentals of Sensor Technology: Principles and Novel Designs. Elsevier, 2023.

This is to certify that M Kavitha of BE EEE has participated in value added course on **Arduino and Tinkercad Mastery: From Simulation to Real-World Implementation** by the dept of eee at sathyabama university conducted from **29.01.2024 to 10.02.2024**

This is to certify that <Name>, BE <dept>, actively took part in the Value Added Course titled "Arduino and Tinkercad Mastery: From Simulation to Real-World Implementation" organized by the Department of Electrical and Electronics Engineering at Sathyabama Institute of Science and Technology, held from **29.01.2024 to 10.02.2024**



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|            |                                                                  |                 |
|------------|------------------------------------------------------------------|-----------------|
| <b>VAL</b> | <b>Arduino: Tinkercad Simulation and Hardware Implementation</b> | <b>Course</b>   |
|            |                                                                  | <b>32 hours</b> |

| <b>Unit</b> | <b>Day</b> | <b>Title of the topic</b>                                                                                                                                                                                                           | <b>Handling Resource Person</b>                          |
|-------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Unit 1      | Day 1      | Overview of Arduino platform and its applications                                                                                                                                                                                   | Dr M.Pushpavalli<br>PERIYAR SELVAN &<br>RAJESH III EEE   |
| Unit 1      | Day 1      | Introduction to Tinkercad for Arduino simulation<br>Basic components and simulation tools in Tinkercad                                                                                                                              | Dr M.Pushpavalli<br>PERIYAR SELVAN &<br>RAJESH III EEE   |
| Unit 2      | Day 2      | Creating and simulating basic circuits in Tinkercad -<br>Writing and simulating simple Arduino code-<br>Understanding the connection between code and<br>simulation- Arduino with Tricolor LED and Push button-<br>Arduino with LCD | Dr M.Kavitha Mohan and<br>Prithish/III EEE               |
| Unit 2      | Day 2      | Display counter using Arduino -Seven Segment Display                                                                                                                                                                                | Dr M.Kavitha Mohan and<br>Prithish/III EEE               |
| Unit 3      | Day 3      | Simulating sensor inputs in Tinkercad ; Ultrasonic sensor<br>– Temperature Sensor                                                                                                                                                   | Dr P.Sivagami& ABHAY<br>VERMA IV EEE<br>Prithish/III EEE |
| Unit 3      | Day 3      | Gas sensor- IR sensor                                                                                                                                                                                                               | Dr P.Sivagami& ABHAY<br>VERMA IV EEE Mohan<br>III EEE    |
| Unit 3      | Day 4      | Pulse Width Modulation- Control a DC Motor Speed and<br>Direction                                                                                                                                                                   | Dr M.Kavitha RAJESH &<br>SASIKUMAR III EEE               |
| Unit 3      | Day 4      | Wireless Connectivity to Arduino- Gas Leakage Detection<br>( Gas sensor) with GSM Module                                                                                                                                            | Parthiban II ECE & Prithivi<br>I ECE                     |
| Unit 3      | Day 5      | Home Automation                                                                                                                                                                                                                     | Dr M.Pushpavalli RAJESH<br>& SASIKUMAR III EEE           |
| Unit 3      | Day 5      | Password based Door Locking System                                                                                                                                                                                                  | Dr P.Sivagami& ABHAY<br>VERMA IV EEE, Mohan<br>III EEE   |
| Unit 4      | Day 6      | Blink the LED, Tricolor LED , LED control thru push<br>button                                                                                                                                                                       | Dr M.Kavitha PERIYAR<br>SELVAN & RAJESH III<br>EEE       |
| Unit 4      | Day 6      | Seven Segment Display, LCD Display (I2C)                                                                                                                                                                                            | Dr M.Kavitha PERIYAR                                     |

|        |        |                                                     |                                                           |
|--------|--------|-----------------------------------------------------|-----------------------------------------------------------|
|        |        |                                                     | SELVAN & SASIKUMAR<br>III EEE                             |
| Unit 4 | Day 7  | Temperature measurement using DHT 11 sensor         | Dr M.Pushpavalli<br>PERIYAR SELVAN &<br>SASIKUMAR III EEE |
| Unit 4 | Day 7  | Obstacle Detection (IR sensor)                      | Dr P.Sivagami & ABHAY<br>VERMA IV EEE                     |
| Unit 4 | Day 7  | Gas Leakage Detection (Gas sensor)                  | Dr P.Sivagami& ABHAY<br>VERMA IV EEE                      |
| Unit 5 | Day 8  | Gas Leakage Detection ( Gas sensor) with GSM Module | Dr M.Pushpavalli Parthiban<br>II ECE & Prithivi I ECE     |
| Unit 5 | Day 8  | Blind Stick                                         | Dr M.Pushpavalli Parthiban<br>II ECE & Prithivi I ECE     |
| Unit 5 | Day 8  | Obstacle Arm Rover                                  | Dr M.Kavitha Parthiban II<br>ECE & Prithivi I ECE         |
| Unit 5 | Day 9  | Drone Rover                                         | Dr M.Kavitha Parthiban II<br>ECE & Prithivi I ECE         |
| Unit 5 | Day 9  | Street light fault detection                        | Dr P.Sivagami Parthiban II<br>ECE & Prithivi I ECE        |
| Unit 5 | Day 9  | Home Automation                                     | Dr P.Sivagami Parthiban II<br>ECE & Prithivi I ECE        |
| Unit 5 | Day 10 | Tyre Pressure Measurement                           | Dr P.Sivagami Parthiban II<br>ECE & Prithivi I ECE        |
| Unit 5 | Day 10 | IOT based smart pulse oximeter                      | Dr M.Kavitha Mohan and<br>Prithish/III EEE                |
| Unit 5 | Day 11 | Soil moisture detection system                      | Dr M.Pushpavalli<br>PERIYAR SELVAN &<br>SASIKUMAR III EEE |
| Unit 5 | Day 11 | Health Monitoring system                            | Dr M.Pushpavalli<br>PERIYAR SELVAN &<br>RAJESH III EEE    |

| S.No | Username                               | Name                   | Register Number |
|------|----------------------------------------|------------------------|-----------------|
| 1    | lakshmilakshmi99995@gmail.com          | BHARATHI B             | 42140004        |
| 2    | divyachinnasamy03@gmail.com            | DIVYA C                | 42140006        |
| 3    | lathadharshini1986@gmail.com           | M.DIVYA DHARSHINI      | 42140007        |
| 4    | divyapd2004@gmail.com                  | DIVYA P                | 42140008        |
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| 6    | meenaroshini220@gmail.com              | MEENA ROSHINI.S        | 42140018        |
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| 19   | sthiruveni3@gmail.com                  | S.Thiruveni            | 42140050        |
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| 21   | vino.c004@gmail.com                    | VINOPRIYA C            | 42140053        |
| 22   | vichumaniveleee035@gmail.com           | M. Vishnu priya        | 42140055        |
| 23   | bharathsandy7654@gmail.com             | Santhosh.K             | 42140059        |
| 24   | aakshayakamakshi@gmail.com             | A. AKSHAYA KAMAKSHI    | 42140061        |
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| 26   | tamilselvankiruthika@gmail.com         | Kiruthika T            | 42140066        |
| 27   | vijayshankar12122401@gmail.com         | Shankar V              | 42140070        |
| 28   | vikass231779@gmail.com                 | Vikass S               | 42140072        |
| 29   | sharichandran86@gmail.com              | HARICHANDRAN S         | 42140075        |
| 30   | apexkrishna04@gmail.com                | Krishna Prakash.N      | 42140703        |
| 31   | rajarajeswarirajarajeswari01@gmail.com | Rajarajeswari M        | 42140034        |
| 32   | viswanathanviswanathan20589@gmail.com  | V.Priyanaga            | 42140032        |
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| 34   | archana20ma@gmail.com                  | Archana D              | 42140079        |
| 35   | hariharanpalani26@gmail.com            | Hariharan Pa           | 42140064        |
| 36   | vishalSharon007@gmail.com              | Vishal Sharon M        | 42140054        |

| Timestamp          | Name               | Email                        | Register number | Section | On a scale of 1 to 5, how much would you rate today's session | Was today's session satisfactory | Kindly give a short feedback about today's session                       | Your suggestion to improve the value added course to be more informative |
|--------------------|--------------------|------------------------------|-----------------|---------|---------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 1/31/2024 14:16:13 | M. Vishnu priya    | vichumaniveleee035@gmail.com | 42140055        | A2      | 4                                                             | Yeah, it was                     | Politely answer for us, good teaching                                    | No                                                                       |
| 1/31/2024 14:18:26 | Mukila Bama A      | bamamukilabama@gmail.com     | 42140023        | A1      | 4                                                             | Yeah, it was                     | Nice                                                                     | Q                                                                        |
| 1/31/2024 14:26:50 | Mukesh             | mukeshmukesh38235@gmail.com  | 42140022        | A1      | 1                                                             | Yeah, it was                     | .                                                                        | ..                                                                       |
| 1/31/2024 14:30:26 | B.kathiravan       | kbalu6888@gmail.com          | 42140065        | A2      | 4                                                             | Yeah, it was                     | Good                                                                     | Some computers are not working please check it,                          |
| 1/31/2024 14:37:04 | AKSHAYA KAMAKSHI A | aakshayakamakshi@gmail.com   | 42140061        | A2      | 5                                                             | Yeah, it was                     | Today's session was quite interesting and the 2 hrs felt really valuable |                                                                          |
| 1/31/2024 14:41:13 | Vinopriya C        | vino.c004@gmail.com          | 42140053        | A2      | 5                                                             | Yeah, it was                     | It was really good                                                       |                                                                          |
| 1/31/2024 14:41:45 | THIRISHA.B         | thirisha092@gmail.com        | 42140049        | A2      | 5                                                             | Yeah, it was                     | Good                                                                     |                                                                          |
| 1/31/2024 15:21:21 | Krishna Prakash.N  | apexkrishna04@gmail.com      | 42140703        | A1      | 4                                                             | Yeah, it was                     | Today the theory taken by faulty easy to understand                      | -                                                                        |

|                    |                   |                                |          |    |   |              |                                                                                                                                                                          |                                                                                          |
|--------------------|-------------------|--------------------------------|----------|----|---|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 1/31/2024 15:33:53 | Kiruthika T       | tamilselvankiruthika@gmail.com | 42140066 | A2 | 5 | Yeah, it was | I appreciate the thorough explanation and the way you guys helped to clear any doubts                                                                                    |                                                                                          |
| 1/31/2024 15:51:13 | Divya dharshini M | divyamarimuthu2005@gmail.com   | 42140007 | A1 | 5 | Yeah, it was | It's is good , I have gained some knowledge. Other workshops I have copy and paste the codings but today's section I have gained that what they have given in the coding | You can make the projector screen little bit bigger                                      |
| 1/31/2024 15:58:01 | S.Thiruvani       | sthiruvani3@gmail.com          | 42140050 | A2 | 5 | Yeah, it was | Thanks for your opportunity and wonderful teaching of third year seniors gland to attend this workshop and it's very helpful for us, to learn new thinks                 | Yes of course we learn new thinks of electronic device like UNO, 7segment, Aurdino, etc, |
| 2/1/2024 1:06:46   | Meena roshini S   | meenaroshini220@gmail.com      | 42140018 | A1 | 3 | Yeah, it was | Brilliant content given... Could improve the way of delivering                                                                                                           | Could improve the way of delivering                                                      |

|                   |                  |                               |            |         |   |              |                                             |                                          |
|-------------------|------------------|-------------------------------|------------|---------|---|--------------|---------------------------------------------|------------------------------------------|
| 2/1/2024 3:16:45  | Pemula Divya     | Pemuladivya3@gmail.com        | 42140029   | A1      | 5 | Yeah, it was | Good                                        | Nothing                                  |
| 2/1/2024 7:06:42  | MOHANASURU THI S | valarmathykamaraj79@gmail.com | 42140020   | A1      | 5 | Yeah, it was | Nice                                        |                                          |
| 2/1/2024 13:45:02 | S.sritharbalu    | Sritharbalu29@gmail.com       | 42140043   | A2      | 4 | Yeah, it was | No issues everything's just fine            | No issues everything is just fine for me |
| 2/1/2024 17:58:38 | DIVYA C          | divyachinnasamy03@gmail.com   | 42140006   | A1      | 5 | Yeah, it was | Good                                        |                                          |
| 2/2/2024 14:20:07 | DIVYA P          | divyapd2004@gmail.com         | 42140008   | A1      | 4 | Yeah, it was | Session is good, learned different programs |                                          |
| 2/1/2024 13:38:54 | Krishna Prakash  | apexkrishna04@gmail           | 42140703   | A1      | 5 | Yeah, it was | Game                                        |                                          |
| 2/1/2024 13:40:52 | Divya dharshini  | lathadharshini1986@g          | 42140007   | A1      | 5 | Yeah, it was | Today's section                             | No suggestions                           |
| 2/1/2024 13:47:12 | Pemula Divya     | Pemuladivya3@gmail.           | 42140029   | A1      | 5 | Yeah, it was | Good                                        | Nothing                                  |
| 2/1/2024 13:48:04 | S.sritharbalu    | Sritharbalu29@gmail.          | 42140043   | A2      | 4 | Yeah, it was | Today's                                     | No issues are there                      |
| 2/1/2024 13:58:21 | M. Vishnu priya  | Vichumaniveleee035            | 42140055   | A2      | 4 | Yeah, it was | Good one                                    | No                                       |
| 2/1/2024 13:59:57 | Mukesh           | mukeshmukesh38235             | 42140022   | A1      | 1 | Yeah, it was | .                                           | .                                        |
| 2/1/2024 14:04:57 | Vikass S         | Vikass231779@gmail.           | 42410072   | A2      | 3 | Yeah, it was | Can Find some                               |                                          |
| 2/1/2024 14:06:25 | Meena roshini S  | meenaroshini220@g             | 42140018   | A1      | 3 | Yeah, it was | Nice                                        | Can improve the                          |
| 2/1/2024 14:08:10 | Shankar V        | vijayshankar12122401          | 42140070   | B.E-EEE | 3 | Yeah, it was | Every practical                             | I suggest you to cut                     |
| 2/1/2024 14:39:06 | AKSHAYA          | aakshayakamakshi@             | 42140061   | A2      | 4 | Yeah, it was | Learned more                                |                                          |
| 2/1/2024 14:43:45 | Muralidharan.R   | muralidharanr260504           | 42140025   | A1      | 4 | Yeah, it was | Could have                                  |                                          |
| 2/1/2024 14:58:00 | Vinopriya C      | vino.c004@gmail.com           | 42140053   | A2      | 5 | Yeah, it was | Good                                        |                                          |
| 2/1/2024 17:09:43 | Rahul km         | pkamalaprakash107@            | 42140033   | A1      | 5 | Yeah, it was | It's really great                           | Nothing                                  |
| 2/1/2024 17:59:23 | DIVYA C          | divyachinnasamy03@            | 42140006   | A1      | 5 | Yeah, it was | Nice                                        |                                          |
| 2/2/2024 2:36:36  | S.Thiruveni      | sthiruveni3@gmail.co          | 42140050   | A2      | 5 | Yeah, it was | Thanks for your                             | Yes                                      |
| 2/2/2024 14:18:22 | DIVYA P          | divyapd2004@gmail.c           | 42140008   | A1      | 4 | Yeah, it was | Today's                                     |                                          |
| 2/5/2024 10:36:24 | S.sritharbalu    | Sritharbalu29@gmail.          | 42,140,043 | A2      | 3 | Yeah, it was | In today's                                  | Other than crowd                         |
| 2/5/2024 11:33:06 | M. Vishnu priya  | Vichumaniveleee035            | 42140055   | A2      | 4 | Yeah, it was | Good                                        | No                                       |
| 2/5/2024 13:08:11 | AKSHAYA          | aakshayakamakshi@             | 42140061   | A2      | 5 | Yeah, it was | It was an                                   |                                          |
| 2/6/2024 13:27:37 | Mukesh           | mukeshmukesh38235             | 42140022   | A1      | 3 | Yeah, it was | .                                           | .                                        |
| 2/6/2024 13:48:57 | AKSHAYA          | aakshayakamakshi@             | 42140061   | A2      | 5 | Yeah, it was | Interesting                                 |                                          |
| 2/6/2024 13:50:54 | Vinopriya C      | vino.c004@gmail.com           | 42140053   | A2      | 5 | Yeah, it was | Good                                        |                                          |

|                   |                 |                      |          |    |   |              |                 |                |
|-------------------|-----------------|----------------------|----------|----|---|--------------|-----------------|----------------|
| 2/6/2024 14:10:02 | M. Vishnu priya | Vichumaniveleee035   | 42140055 | A2 | 3 | Yeah, it was | Good            | No             |
| 2/6/2024 14:21:32 | N.krishna       | apexkrishna04@gmail  | 42140703 | A1 | 5 | Yeah, it was | Today A1        |                |
| 2/8/2024 10:24:50 | M. Vishnu priya | Vichumaniveleee035   | 42140055 | A2 | 3 | Yeah, it was | Good            | No             |
| 2/8/2024 10:50:44 | E.sanjai kumar  | e.sanjaikumar95@gm   | 42140074 | A2 | 5 | Yeah, it was | Explore about   |                |
| 2/8/2024 12:59:59 | S.sritharbalu   | Sritharbalu29@gmail. | 42140053 | A2 | 4 | Yeah, it was | I got some      | No suggestions |
| 2/8/2024 13:16:01 | AKSHAYA         | aakshayakamakshi@    | 42140061 | A2 | 5 | Yeah, it was | Interesting.    |                |
| 2/8/2024 17:08:44 | MOHAMED         | bmmufeez@gmail.co    | 42140019 | A1 | 3 | Yeah, it was | I got interract |                |



# SATHYABAMA

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SCHOOL OF ELECTRICAL AND ELECTRONICS

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Value Added Course Report



Chennai, Tamil Nadu, India

Department of Electrical and Electronics Engineering, SATHYABAMA UNIVERSITY, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi Road,, Camps Rd, Kamaraj Nagar, Semmancheri, Chennai, Semmanjeri, Tamil Nadu 600119, India

Lat 12.874174°

Long 80.220821°

11/09/23 10:34 AM GMT +05:30

Google



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INSTITUTE OF SCIENCE AND TECHNOLOGY

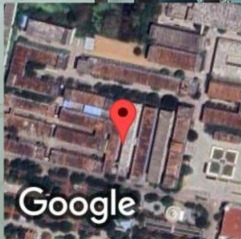
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 **GPS Map Camera**



**Chennai, Tamil Nadu, India**

V6FC+J75, Kamaraj Nagar, Semmancheri, Chennai, Semmanjeri, Tamil Nadu 600119, India

Lat 12.874137°

Long 80.220776°

29/01/24 01:32 PM GMT +05:30



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GPS Map Camera

Chennai, Tamil Nadu, India

V6FC+J75, Kamaraj Nagar, Semmancheri, Chennai, Semmanjeri, Tamil Nadu 600119, India

Lat 12.874127°

Long 80.22078°

30/01/24 01:58 PM GMT +05:30



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Chennai, Tamil Nadu, India

V6FC+J75, Kamaraj Nagar, Semmancheri, Chennai, Semmanjeri, Tamil Nadu 600119, India

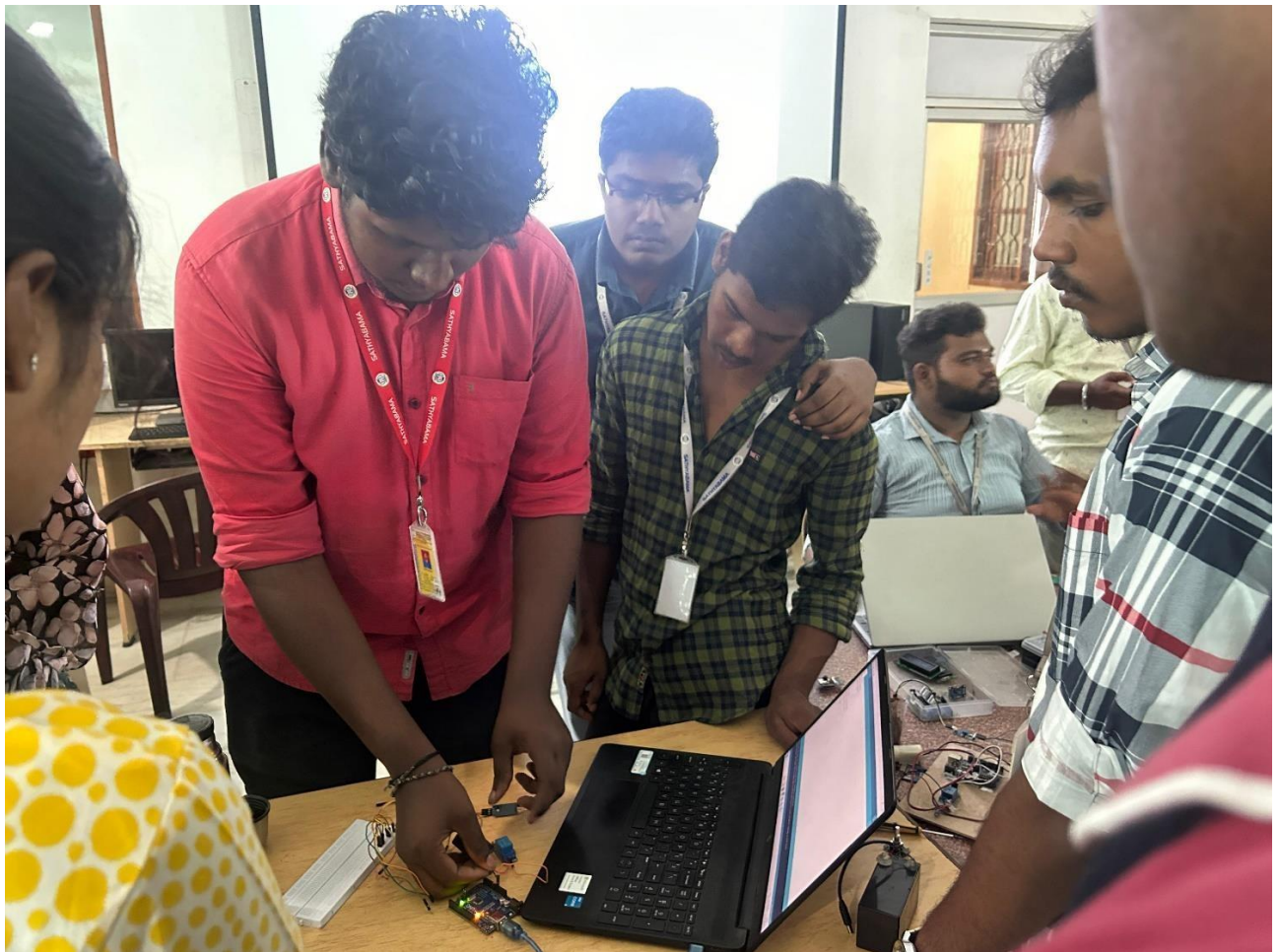
Lat 12.874125°

Long 80.22078°

31/01/24 01:23 PM GMT +05:30



GPS Map Camera





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Jeppiar Nagar, Ragive Gandhi Salai, Chennai - 600119

[www.sathyabama.ac.in](http://www.sathyabama.ac.in)

School of Electrical and Electronics  
Department of Electrical and Electronics Engineering

## Value Added Course Completion Certificate

This is to Certify that

**BHARATHI B**

42140004

of **B.E. EEE**, actively took part in the Value Added Course titled "**Arduino and Tinkercad Mastery: From Simulation to Real-World Implementation**" organized by the **Department of Electrical and Electronics Engineering** at **Sathyabama Institute of Science and Technology**, held from **29.01.2024** to **10.02.2024**.

HOD/ Department of EEE  
Dr. S. Radhika

Dean/ School of EE  
Dr. N. M. Nandhitha



Certificate ID : 1



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**SCHOOL OF ELECTRICAL AND ELECTRONICS**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

organizes

Value Added Course

on

## Arduino and Tinkercad Mastery

From simulation to Real - world Implementation

SCAN ME



<https://forms.gle/bscokZbf2aJ72317>

Date : 29.01.2024 to 10.02.2024 || Last Date of Registration : 09.01.2024

### Chief Patrons:

Dr. Mariazeena Johnson, Chancellor  
Dr. Marie Johnson, President  
Mr. J. Arul Selvan, Vice President  
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### Patrons:

Dr.T.Sasipraba, Vice Chancellor

### Conveners:

Dr.N.M.Nandhitha, Dean EE  
Dr. S. Radhika, HOD EEE

### Co Conveners:

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Dr. M.Pushpavalli, Asst. Professor,EEE  
Dr.P.Sivagami, Asst.Professor,EEE

### Student Organisers:

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Periyar Selvan N,III EEE.  
Rajesh G,III EEE.  
Sasikumar K,III EEE.  
Pretiish Rajasekaran ,III EEE.  
Abay varma ,IV EEE.  
Partheepan J, II ECE.  
Prithviraj R, I ECE.

## About Sathyabama Institute of Science and Technology

Sathyabama is a prestigious institution which excels in the fields of Engineering, Science and Technology for more than three successful decades. It offers multi-disciplinary academic programmes in various fields of Engineering, Science, Technology, law, Dental Science, Pharmacy, Nursing, Management, Arts and Science and Allied Health Sciences. It is established under Sec.3 of UGC Act, 1956 and is been Accredited with 'A++' Grade by the National Accreditation and Assessment council. The Institution has a team of dynamic and outstanding faculty, innovative pedagogical practices, state of the art infrastructure and world class Research Facilities.

## About EEE department

Department of Electrical and Electronics Engineering was established in the year 1992 to offer UG Program in Electrical and Electronics Engineering. Having consistently grown in terms of competence and expertise in the field of Electrical and Electronics Engineering, the department is also offering Post Graduate Program in Power Electronics and Industrial Drives and Doctoral Research programs from 2002. The department is accredited by National Board of Accreditation (NBA).

## VALUE ADDED COURSE CONTENT :

### Unit 1: Introduction to Arduino and Tinkercad Simulation 4 Hrs

Overview of Arduino platform and its applications -Introduction to Tinkercad for Arduino simulation- Basic components and simulation tools in Tinkercad

### Unit 2: Getting Started with Tinkercad Circuits and Basic Coding 5 Hrs

Creating and simulating basic circuits in Tinkercad -Writing and simulating simple Arduino code-Understanding the connection between code and simulation- Arduino with Tricolor LED and Push button-Arduino with LCD -Display counter using Arduino -Seven Segment Display

### Unit 3: Intermediate Tinkercad Projects: Sensor Integration 6 Hrs

Simulating sensor inputs in Tinkercad ; Ultrasonic sensor – Temperature Sensor- Gas sensor- IR sensor-Pulse Width Modulation- Control a DC Motor Speed and Direction -Wireless Connectivity to Arduino- GasLeakage Detection ( Gas sensor) with GSM Module -Home Automation- Password based Door Locking System

### Unit 4: Transition to Hardware: Setting Up Your Arduino Kit8Hrs

Basics of breadboarding and wiring - Overview of essential hardware components (Arduino board, sensors, actuators) – Human Detection (PIR motion Sensor)- Gas Leakage Detection (Gas sensor)- Obstacle Detection (IR sensor) – Temperature measurement using DHT 11 sensor

### Unit 5: Hardware Implementation Projects 9 Hrs

Building real-world Arduino projects using physical components - Gas Leakage Detection ( Gas sensor)with GSM Module- Blind Stick - Obstacle Arm Rover- Drone Rover –Street light fault detection-Home Automation- Tyre Pressure Measurement-IOT based smart pulse oximeter-Soil moisture detection system- Health Monitoring system

## COURSE OUTCOMES:

- CO1: Understand Arduino Fundamentals
- CO2: Apply Tinkercad Simulation for diverse applications.
- CO3: Analyze the function of Sensors and Actuators Virtually
- CO4: Evaluate the Simulation output through Hardware Implementation
- CO5: Design hardware projects incorporating various sensors
- CO6: Develop prototype for real time application using Arduino