

## COURSE PROSPECTUS

<b>Name of the Group:</b>	VLSI & ES
<b>Name of the Course:</b>	<b>Online</b> Certificate course in <b>Robotic Control using Arduino</b>
<b>Course Code:</b>	ST104
<b>Starting Date:</b>	15 <sup>th</sup> June 2020
<b>Duration:</b>	4 Weeks
<b>Course Coordinator:</b>	Ishant Bajpai. +91-9958016673
<b>Last date of Registration:</b>	12 <sup>th</sup> June 2020

### Preamble:

- An embedded system is a combination of hardware and software if both should be synchronized with each other. Some examples are as follows: industrial machines, automobiles, medical equipment, cameras, household appliances, airplanes, vending machines etc.
- Arduino is an open-source microcontroller platform that has been widely popular in the past decade among hobbyists and academics. Arduino is increasingly being adopted in courses span different disciplines in schools and universities. In this course you will learn how the Arduino microcontroller can be used for various embedded applications.

### Objective:

- The course aim to develop expertise in Embedded programming using Arduino microcontroller.

**Outcome:** After successful completion of this Course, students can able to:

1. Learn embedded programming from the beginner to expert level
2. Learn to use LCD, OLED and TFT screens with buttons and touch interface
3. Use communications technologies like Wifi, Bluetooth and radio
4. Learn to minimise memory footprint, reduce power consumption and increase performance in a program

## Course

SI. No.	Modules	Duration
Module 1	Prototyping Basics	Week1
Module 2	Programming Basics	Week2
Module 3	Arduino Programming	Week3
Module 4	Advanced Topics	Week4

### Other Details:

**Course Fees:** (Non-Refundable) **Rs.300/- (Including GST)**

However, the above registration fee shall be refunded on few special cases as given below:

1. If course postponed and new date is not convenient for the student.
2. If course cancelled.

**Payment schedule:** The Fee is to be paid in one instalment as given below.

Instalment No.	Last Date for Payment	Amount (in Rs.)
1.	26-06-2020	300/-

**Eligibility:** Pursuing 12<sup>th</sup> standard student (Science) or above

### How to apply:

Candidates can apply online in our website <http://14.139.173.196/reg/or> download the Registration from our Website [www.nielit.gov.in/chennai](http://www.nielit.gov.in/chennai). After filling the form with all documents and fees, it can be submitted to NIELIT Chennai office in person or through post before starting of the course. Payment towards non-refundable Registration and Course fee can be paid through any one of the following modes:

- ✓ DD drawn from a nationalized bank (preferably SBI) in favour of “NIELIT Chennai” payable at Chennai.
  - ✓ Online transaction: Account No: 31185720641 Branch: Kottur (Chennai), IFS Code: SBIN0001669.
  - ✓ Pay through Nationalized Bank Debit Card (Service charges applicable)
- Note:* The Institute will not be responsible for any mistakes done by either the bank concerned or by the depositor while remitting the amount into our account.



# National Institute of Electronics and Information Technology, Chennai

**Last date of Registration:** 12<sup>th</sup> June 2020

**Selection of candidates:** Selection is based on the first come basis (subject to fulfilling the eligibility criteria)

## Admission Procedure:

All interested candidates are required to fill the Registration form with the Course fees before 12<sup>th</sup> June 2020 with all the necessary following documents.

- Original and self-attested Copies of Proof of Age, Qualifications, etc.
- One passport size photograph and one stamp size photograph for identity card.
- Self-attested copy of Govt. issued photo ID card

**Note:** Working days are from Monday to Friday. Admission timings are from 9.00 am to 5.30 pm.

**Discontinuing the course:** No fees under any circumstances shall be refunded in case of a student discontinuing the course. No certificate shall be issued if discontinued.

**Course Timings:** 1 hour online daily (from Monday to Friday) during working hours

**Mode of Training:** Online

**Location:** NIELIT Chennai is located at Gandhi Mandapam Raod, Kotturpuram, Chennai (Landmark: Opp. To Anna Centenary Library)



**Address:** National Institute of Electronics and Information Technology Chennai Centre,

ISTE Complex, No. 25, Gandhi Mandapam Road, Chennai – 600025

E-mail: [training.chennai@nielit.gov.in](mailto:training.chennai@nielit.gov.in) / Phone: 044-24421445

Contact Person: Ishant Bajpai, Mobile: 9958016673

**Course enquiries:** Students can enquire about the various courses either on telephone or by personal contact between 9.15 A.M. to 5.15 P.M. (Lunch time 1.00 pm to 1.30 pm) Monday to Friday

## **Annexure**

### **Detailed Syllabus of the Course**

#### **Module 1: Prototyping Basics**

- Fundamentals of Electronics
- Essential Tools: Breadboard and jumper wires etc.
- Introduction to Microcontroller
- Introduction to Embedded Systems About Arduino Uno Board & ATMEGA328
- Microcontroller Architecture

#### **Module 2: Programming Basics**

- Getting Started with Arduino IDE
- Basics of 'C' Programming:
  - Data Type
  - Control Statements (if-else)
  - Looping (while, for, switch)
  - Functions

#### **Module 3: Arduino Programming**

- Hardware Interfacing: LCD, Keypad, Switches, Seven Segment Display, Relays (AC Appliance Control), Buzzer
- Sensor Interfacing: LDR, Colour, temperature, humidity, pressure, Distance, sound etc  
Actuators like Servo & Stepper Motors etc.

#### **Module 4: Advanced Topics**

- Timers and Interrupts
- Wireless Connectivity (Bluetooth, Zigbee Radio & Wi-Fi)
- UART & SPI Communication Protocol

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