Arduino Workshop at Kirorimal College, Delhi University by TI Centre for Embedded Product Design, Netaji Subhas University of Technology, Delhi 28th June - 29th June, 2022

This workshop will be based on the Arduino Nano to introduce students with basics of the Arduino Platform and how to use elementary components for physical computing like LEDs, switches, sensors, buzzers and displays. The students will also learn how to use the serial monitor to debug problems with their circuits.

Project Demonstration
Prof. Dhananjay Gadre will demonstrate various projects made at TI-CEPD, NSUT to showcase the use cases of Arduino and similar platforms (ESP32, MSP430, ATTiny etc.)

Introduction to Micro-controller
We begin with introducing what Arduino is and explaining the difference between a Microcontroller and a Microprocessor and the use of Arduino.

Setup and Installation
Showing students how to install the required software and familirising students with the UI of the Arduino IDE and the serial monitor.

LED Blinker
Explaining the code structure and showing how to upload with LED Blink example code of the pre-attached LED on the board.

Breadboard
Showing how to use a breadboard and assemble circuits on it.

Digital Output
Explaining what are digital pins and using digitalWrite() to make an LED blinker circuit and finding out value of series resistance to be attached with different coloured LEDs.

Digital Input
What is pull-up and pull-down? Physical structure of an Omron Switch. Assemble a circuit to read button and digitalWrite to a buzzer.

Analong Input
What is an ADC? analogRead() function and how to use sensors with LDR as an example and how to use a Potentiometer. Using Serial monitor and plotter to display analog values on computer.

Analog Output
What is PWM? Using analogWrite() function for fading LED and driving a buzzer.

Project to input readings from an LDR an change the beep rate of a buzzer according to it (inspired by LDR probe)