

# Introduction to Microcontrollers, Sensors and Arduino

**Objective:** To give a hands-on practical exposure of building small electronic projects applying theoretical concepts

**Location:** SPIT – EXTC Lab

**Dates :** 09/Feb/2018 and 10/Feb/2018

## 1. Intro to uC uses by example

1. Timelapse Dolly
2. CCL
3. Firebird V (EYRC video)

## 2. Short intro to Arduino (What is a microcontroller? Pinout, functions, bootloader)

## 3. Blink

1. Onboard Led Blink
2. Resistor Calculations
3. External led blink
4. Analog v/s Digital?

## 4. PWM

1. External Led brightness control demo
2. What is PWM?
3. External Led brightness control practical

## 5. Motor

1. Motor speed control demo
2. Motor speed control practical

## 6. Digital Input

1. Led control through button
2. High/Low impedance pin on uC
3. Pull up/pull down explanation
4. Bouncing/debouncing explanation

## 7. Interrupts

1. Interrupt practical: blinking one led, toggling another through interrupts

## 8. Analog Input

1. Led brightness through Pot demo
2. What is analog input? And its importance
3. Explain Serial, Pot values on serial
4. Led brightness through Pot practical

## 9. Ultrasonic Distance Sensor

1. Distance on Serial
2. Distance on Led array (Plus led brightness)

## 10. Intro to Minimum System Design

## 11. Intro to embedded C programming

Blink example (code, basic architecture flow, datasheet reading)