

ANNAMALAI UNIVERSITY
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

25ECVAC02	ARDUINO PROGRAMMING TO BUILD REAL WORLD APPLICATIONS	L	T	P
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UNIT I : INTRODUCTION

Introduction and Familiarization - Course Introduction - Hardware Overview - Download and Install the Arduino IDE - Arduino IDE and Sketch Overview - Understanding Arduino data types, Variables and constants, Arrays, Operators, Control Statements

UNIT II : ARDUINO FUNCTIONS AND COMMUNICATION

Pins Configured as INPUT- Pull-up Resistors-Pins Configured as OUTPUT- pinMode Function –digital Write Function –digital Read –analog Read function -Arduino Interrupts-delay function-delay functions-delay Microseconds function -millis function -micros function- and Serial Port Communication.

UNIT III : ARDUINO DISPLAYS

Working with Serial Monitor -Line graph via serial monitor -Interfacing a 8 bit LCD to Arduino -Fixed one line static message display- Running message display-Using the LCD Library of Arduino

UNIT IV : SENSORS AND ACTUATORS

Connecting and work with different sensors, such as Humidity, Proximity, IR Motion, Accelerometer, Sound, Light Distance, Pressure, Thermal sensor, Soil moisture sensor, Passive Infrared (PIR) sensor, color sensor, Flame/Fire sensor, Touch sensor, Accelerometer sensor, Pulse/Heart beat sensor, Alcohol/gas sensor to ARDUINO Board-Reading various sensor data on serial monitor and LCD Display- Functioning of actuator.

UNIT V : SIMPLE PROJECTS

Simple Projects: Automated Plant Watering System - Smart Dustbin-IR Sensor-based Automatic Gate Opener-Fire Alarm Circuit - Arduino Traffic Light Simulator - Door Alarm using an Ultrasonic Sensor - Pulse Rate (BPM) Monitor using Arduino & Pulse Sensor.

REFERENCES

1. Simon Monk, Arduino: Getting Started with Sketches, Second Edition (Tab), Kindle Edition, McGraw Hill Publishing House, 2016.
2. Ryan Turner, Arduino Programming: 2 books in 1 - The Ultimate Beginner's & Intermediate Guide to Learn Arduino Programming Step by Step Paperback, Nelly B.L. International Consulting Ltd, 2019.
3. James Arthur, Arduino: The complete guide to Arduino for beginners, including projects, tips, tricks, and programming, Ingram Publishing, 2020.
4. Daniel Geron, Arduino Programming: The Ultimate Guide for Absolute Beginners with Steps to Learn Arduino Programming and The Fundamental Electronic Concepts, Tiger Gain Ltd, 2021.