



## **ARM Embedded system course content (6 Weeks)**

### **(2 Hrs class = 1 Hr theory + 1 Hr Practice session)**

#### **1. Basics of ARM architecture**

- a. LPC2138 architecture and pin diagram.
- b. Programmable GPIO PORTS.
- c. PLL oscillators.
- d. RESET options.
- e. Others microcontroller of ARM.

#### **2. Code sequence**

- a. PORT initialization & its significance.
- b. PORT declaration & its significance.
- c. Exercise.

#### **3. Input output programming**

- a. LED based programs with detailed analysis.
- b. Switch & LED based programs and their possible combinations.
- c. DC motor.
- d. Seven segment library creation.
- e. Codes based on seven segments in combination with other peripherals.

#### **4. LCD programming**

- a. Discussion of Hardware of LCD module with pin diagram.
- b. Modes in LCD.
- c. Discussion of LCD library.
- d. Projects based on LCD in industries.

#### **5. Hardware interrupts (EINT0/1/2/3)**

- a. Basics of interrupt.
- b. Discussion of interrupt registers.
- c. Projects & Applications.

#### **6. Timer/counter**

- a. Basics of Timer/Counter.
- b. Discussion of timer/counter registers.
- c. PWM generation & its industrial application.
- d. Exercises & Sensors programming based on timers.

#### **7. UART (universal asynchronous receiver transmitter) protocol**

- a. Basics of UART.
- b. UART frame format.
- c. Discussion of UART registers & UART library.
- d. Projects & applications of UART in industries.

#### **8. ADC (Analog to digital convertor)**

- a. Basics of ADC.
- b. Discussion of ADC registers.
- c. ADC library.
- d. Sensor development.
- e. Projects & applications of ADC in industries.

#### **9. DAC (Digital to Analog convertor)**

- a. Basics of DAC.
- b. Discussion of DAC registers.
- c. Projects & applications of DAC.

#### **10. Real time clock**

- a. Basics of RTC unit.
- b. Registers of RTC.
- c. Project & applications of RTC.

#### **11. SPI (serial peripheral interface) protocol**

- a. Basics of SPI.
- b. Discussion of SPI registers.
- c. SPI library.
- d. Projects & applications of SPI in industries.

#### **12. I2C or TWI (Twin wire interface) protocol**

- a. Basics of I2C.
- b. Discussion of I2C registers.
- c. I2C library.
- d. Projects & applications of I2C in industries.

PROJECTS CURRENTLY USED IN INDUSTRIES & LIVE PROJECTS.



Content details:

An ARM processor is one of a family of CPUs based on the RISC (reduced instruction set computer) architecture developed by Advanced RISC Machines (ARM). ARM makes 32-bit and 64-bit RISC multi-core processors. RISC processors are designed to perform a smaller number of types of computer instructions so that they can operate at a higher speed, performing more millions of instructions per second (MIPS).

ARM processors are extensively used in consumer electronic devices such as smartphones, tablets, multimedia players and other mobile devices, such as wearables.

In the above content, ARM7 architecture based LPC21XX SERIES based lectures has been provided. Input output operations with all internal peripherals will be interfaced to make trainee industry ready. For detail syllabus, check the course content in the link below.

Interview guidance will also be provided for over all development of students.