*ieee**cusb***

Embedded AVR Work
Plan

2025-
2026

IEEE CAIRO
UNIVERSITY
STUDENT BRANCH

Workshop Overview

- **Title:** Embedded AVR for Beginners
- **Track Type:** Foundational
- **Duration:** 10 Sessions (2–3 hours each)
- **Target Audience:**

  - First-year & second-year engineering students
  - Anyone with zero background in embedded systems

- **Workshop Goal:**

  To build strong fundamentals in **C programming and bare-metal embedded systems** and prepare students to develop a **competition-ready mini project**.

Hardware & Tools

- **Required Hardware**

  - ATmega32 board
  - Breadboard
  - LEDs, resistors, buttons
  - Potentiometer
  - LCD
  - Wires

- **Software**

  - Atmel Studio
  - Proteus (for simulation)
  - GitHub (for code templates)

Session Plan

Session	Content
0	Intro + Environment Setup
1	C Programming – Part 1
2	C Programming – Part 2
3	Embedded Systems Concepts
4	GPIO + Layered Architecture
5	Interrupts
6	Timers & ICU
7	PWM & ADC
8	LCD & Keypad
9	UART
10	I2C & SPI

Instructor Guidelines

For each instructor Must submit:

- Session slides
- Lab code
- Protous Simulation
- Feedback report

Final Project Rules:

- Must use **at least 4 peripherals**
- Must have:

  o Sensors
  o User interface
  o Real logic (not blinking LEDs)

- Must include:

  o README
  o Block diagram
  o Flowchart

Examples:

- Smart fan controller
- Digital thermostat
- Access control system
- Mini weather station