



CALIBER VIRTUAL TECHNOLOGIES

PRACTICAL TECHNOLOGY TRAINING | SALEM

ADMISSIONS OPEN

3-MONTH EMBEDDED SYSTEMS WITH HANDS-ON

From electronics fundamentals to real-time IoT projects

12

WEEKS

120

TRAINING HOURS

70%

PRACTICAL

3

PROJECT LEVELS

Build skills. Build hardware. Build your future.

Arduino | PIC | ESP32 | Sensors | Motors | IoT | PCB

ENQUIRE NOW

www.calibertech.in

INDUSTRY-ORIENTED LEARNING

Turn ideas into working embedded products

About Caliber

Caliber Virtual Technologies provides practical technology training designed to connect classroom concepts with real hardware development. Learners progress through guided experiments, debugging sessions, mini projects and a final application-focused prototype.

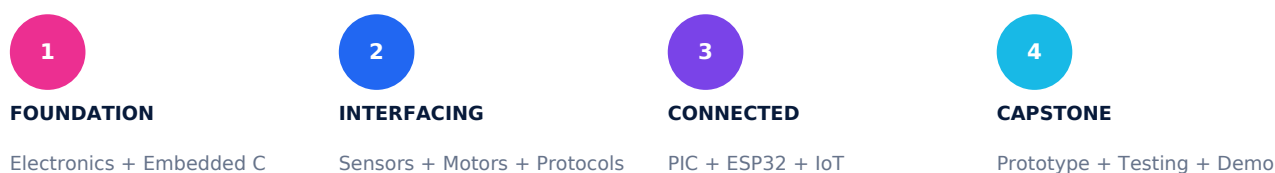
Why this program?

- Trainer-led circuit demonstrations
- Individual hands-on exercises
- Hardware and software debugging
- Datasheet-reading practice
- Project documentation and viva support

Course at a glance

Duration	3 months / 12 weeks	Recommended schedule	2 hours/day, 5 days/week
Total learning	120 hours	Practical ratio	70% hands-on
Mode	Offline / lab based	Level	Beginner to job-ready
Assessment	Weekly + projects	Certificate	On successful completion

Learning pathway



WHO CAN JOIN?

Engineering and diploma students, graduates, faculty members, technicians, makers and beginners interested in embedded product development. Basic computer knowledge is sufficient.



MONTH 1

Electronics, Embedded C and Arduino foundations

1

WEEK 1 | BASIC ELECTRONICS

Core topics

Voltage, current, resistance, power, Ohm's law, passive components, diode, transistor, MOSFET, relay and regulators.

Hands-on: LED circuits, voltage divider, component testing, relay driver and 5 V supply.

2

WEEK 2 | EMBEDDED FUNDAMENTALS

Core topics

Embedded architecture, MCU vs MPU, Flash, RAM, EEPROM, registers, GPIO, logic levels and Arduino Uno.

Hands-on: IDE setup, first upload, LED, button, buzzer and relay control.

3

WEEK 3 | EMBEDDED C

Core topics

Data types, operators, conditions, loops, arrays, strings, functions, pointers, structures and bitwise operations.

Hands-on: LED patterns, binary counter, menu logic and modular sensor programs.

4

WEEK 4 | DISPLAY + USER INPUT

Core topics

Seven-segment, 16x2/20x4 LCD, I2C LCD, keypad, switch debouncing and menu design.

Hands-on: Digital counter, keypad interface, LCD menu and password-controlled relay.

MONTH 1 MINI PROJECT

Password-Based Electronic Door Lock

Keypad authentication, LCD user prompts, buzzer feedback and relay output.



MONTH 2

Sensors, communication protocols and actuator control

1

WEEK 5 | SENSORS + ADC

Core topics

ADC, calibration, analog scaling, LM35, LDR, IR, ultrasonic and ACS712 current sensing.

Hands-on: Thermometer, automatic light, current monitor and threshold alarm.

2

WEEK 6 | TIMERS + INTERRUPTS

Core topics

Hardware/software timing, external interrupts, timer interrupts, PWM and non-blocking programming.

Hands-on: Stopwatch, interrupt counter, LED dimmer, servo and motor speed control.

3

WEEK 7 | COMMUNICATION

Core topics

UART, I2C, SPI, RS232/RS485 basics, master-slave concepts and serial debugging.

Hands-on: PC serial link, controller-to-controller UART, RTC, EEPROM and RS485.

4

WEEK 8 | MOTORS + OUTPUTS

Core topics

Relay/contacter interface, isolation, DC motor, stepper, servo, solenoid, pump and protection circuits.

Hands-on: Forward/reverse drive, stepper sequence, servo gate and temperature fan.

MONTH 2 MINI PROJECT

Automatic Water Tank and Pump Controller

Level sensing, motor protection logic, auto/manual operation and LCD status.



MONTH 3

Connected systems, PCB workflow and capstone project

WEEK 9 | PIC MICROCONTROLLER

PIC16F877A/16F887 architecture, MPLAB X, configuration bits, GPIO, ADC, timers and interrupts.

Hands-on: PIC LED, relay, LCD, ADC and Proteus simulation.

WEEK 10 | ESP32 AND IoT

Wi-Fi, HTTP, JSON, MQTT, web server, cloud logging and basic IoT security.

Hands-on: Wi-Fi relay, sensor dashboard and alert prototype.

WEEK 11 | PCB DEVELOPMENT

Schematic capture, footprints, routing, grounding, DRC, Gerber files, soldering and board testing.

Hands-on: Design and assemble a sensor or relay controller PCB.

WEEK 12 | FINAL PROJECT

Requirement analysis, block diagram, component selection, firmware, prototype, test plan and documentation.

Hands-on: Build, troubleshoot, demonstrate and defend the capstone.

Suggested capstone projects

1. IoT energy monitor
2. Smart home controller
3. Motor protection unit
4. Solar battery monitor
5. Smart irrigation
6. RFID attendance
7. Temperature logger
8. Water-level controller
9. GSM security alert

Assessment and completion

Weekly practicals	25%	Mini projects	30%
Embedded C test	15%	Final project	20%
Viva + presentation	10%	Total	100%

CAREER EXPOSURE

Embedded trainee
Firmware trainee
IoT developer
Hardware test engineer
PCB design trainee

**CONTINUE LEARNING**

Other practical programs at Caliber

INDUSTRIAL AUTOMATION

PLC programming, sensors, relays, HMI and control-panel fundamentals.

INTERNET OF THINGS

ESP8266/ESP32, cloud dashboards, MQTT and remote monitoring.

PCB DESIGN

Schematic, layout, Gerber generation, assembly and testing.

ARDUINO + ROBOTICS

Controller basics, motor drivers, sensors and mobile robots.

EV TECHNOLOGY

EV subsystems, battery monitoring, energy management and charging basics.

INTERNSHIP + PROJECTS

Guided internships and academic prototype development support.

Training kit and software exposure

Arduino Uno, PIC16F877A/PIC16F887, ESP32/NodeMCU, breadboard, LCD, keypad, relay, motors, motor drivers, common sensors and measuring tools. Software exposure includes Arduino IDE, MPLAB X, Proteus and a PCB design platform.



Explore more at calibertech.in

Scan the QR code for course updates and announcements.