



MICROSOFT TRAINING

Arduino Controller Essentials: Introduction to Programming and Embedded Systems Course Overview

Master Arduino programming and embedded systems. Develop practical skills to build and control electronic projects.

DURATION

2 hours

LEVEL

Intermediate

FORMAT

Instructor-Led

- Globally Recognized Certification

- Expert-Led Hands-On Training

- Flexible Scheduling

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COURSE OVERVIEW

The "Arduino Controller Essentials: Introduction to Programming and Embedded Systems Course Overview" provides a fundamental yet comprehensive introduction to the world of microcontrollers and embedded systems using the highly popular Arduino platform. This course is meticulously designed for beginners and enthusiasts eager to delve into physical computing, offering a clear pathway to understanding how software interacts with hardware to create intelligent devices. You'll gain hands-on experience with the Arduino IDE, learn the basics of C/C++ programming tailored for microcontrollers, and explore how to interface with a variety of electronic components like sensors and actuators.

Duration	2 hours
Level	Intermediate
Vendor	Microsoft

COURSE CURRICULUM

01 Module 1: Getting Started with Arduino

- What is Arduino? History and ecosystem
- Overview of different Arduino boards (Uno, Nano, Mega)
- Installing and configuring the Arduino IDE
- Introduction to the 'Blink' sketch: Your first program

02 Module 2: Basic Electronics and Components

- Understanding breadboards, resistors, LEDs, and basic wiring
- Digital vs. Analog signals and pins
- Introduction to input components: Buttons and potentiometers
- Introduction to output components: Buzzers and simple motors

03 Module 3: Arduino Programming Fundamentals

- Core C/C++ syntax for Arduino: Variables, data types, operators
- Control structures: if/else statements, for loops, while loops
- Functions and creating reusable code blocks
- Understanding Serial Communication for debugging and data exchange

04 Module 4: Interfacing with Sensors and Actuators

- Reading analog inputs from sensors (e.g., photoresistor, temperature sensor)
- Controlling digital outputs for complex patterns
- Implementing Pulse Width Modulation (PWM) for analog-like control
- Introduction to basic libraries for component control

05 Module 5: Building Simple Embedded Projects

- Project: Designing and building a simple traffic light controller
- Project: Creating an environmental monitor with basic light and temperature sensors
- Project: Implementing a basic security system with a motion sensor
- Troubleshooting common issues in Arduino projects

CAREER PATHWAYS

Graduates of this program are prepared for the following roles:

- > **Junior Embedded Systems Technician**
- > **IoT Device Prototyper**
- > **Automation Assistant**

FREQUENTLY ASKED QUESTIONS

Q: What prior experience or knowledge is recommended before taking this Arduino Controller Essentials course?

This course is designed for absolute beginners. While basic computer literacy is helpful, no prior programming or electronics knowledge is strictly required. We will start from fundamental concepts of both hardware and software, making it accessible for anyone interested in embedded systems.

Q: How will this course specifically help me advance towards a career in IoT or robotics?

This course provides the foundational programming and hardware interfacing skills critical for IoT and robotics. You'll learn how to program microcontrollers, integrate sensors to gather data, and control actuators, which are core competencies for developing smart devices, prototyping robotic functionalities, and building automation solutions in these fields. It serves as an essential stepping stone to more advanced specialized training.

Q: What practical skills will I gain that I can immediately apply in personal projects or entry-level roles?

Upon completion, you'll be able to write basic C/C++ programs for microcontrollers, understand digital and analog interfacing, connect and read data from various sensors, control different types of actuators, and build simple, functional embedded systems. These hands-on skills are directly transferable to personal maker projects, educational initiatives, or entry-level technical support and prototyping roles in hardware-focused industries.

ABOUT COMPUTER PRIDE



East Africa's Premier IT Training Center

With over 15 years of excellence, Computer Pride delivers globally recognized certification programs from leading technology vendors. Located on Kenyatta Avenue in Nairobi's CBD, our state-of-the-art facilities and expert instructors have empowered thousands of professionals across East Africa.

15+

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READY TO ENROL?

Take the next step in your technology career.

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