The detailed content for a 2-day training program on "**Basic Electronics and Microcontrollers**":

Day 1:

A. Introduction to Basic Electronics and Circuit Design
- Overview of the basic concepts and principles of electronics, such as voltage, current, resistance, and power
- Explanation of the basic components of electronic circuits, such as resistors, capacitors, and transistors
- Hands-on exercises to reinforce the concepts and techniques covered, including building and testing simple circuits

B. Introduction to Microcontrollers and Embedded Systems
- Overview of the concept of microcontrollers and their applications in digital systems and products
- Explanation of the components of a microcontroller-based system, such as the microcontroller, memory, and input/output devices
- Discussion of the differences between microcontrollers and other types of computing systems, such as personal computers and servers

C. Introduction to programming microcontrollers using C
- Overview of the C programming language and its use in microcontroller programming
- Explanation of the basic syntax and structure of C code, including variables, data types, functions, and control structures
- Hands-on exercises to reinforce the concepts and techniques covered, including writing simple C programs for microcontrollers

Day 2:

A. Advanced Microcontroller Programming Techniques
● Overview of advanced microcontroller programming techniques, such as interrupt handling, timers, and communication protocols
● Explanation of the use of these techniques in real-world applications and systems
● Hands-on exercises to reinforce the concepts and techniques covered, including implementing advanced programming techniques in C code

B. Interfacing Microcontrollers with External Devices
● Overview of the process for connecting and communicating with external devices, such as sensors, actuators, and displays
● Explanation of the use of communication protocols, such as SPI, I2C, and UART, in interfacing with external devices
● Hands-on exercises to reinforce the concepts and techniques covered, including interfacing with a variety of external devices

C. Design and Implementation of Microcontroller-based Systems
● Overview of the process for designing and implementing microcontroller-based systems, including hardware design, software development, and testing
● Explanation of the best practices and considerations for designing and implementing reliable and efficient microcontroller-based systems
● Hands-on exercises to reinforce the concepts and techniques covered, including designing and implementing a simple microcontroller-based system