Embedded Systems Programming

USB Cable
USB Port
Laptop
Courtesy of Arduino
Development Board

Learning Made Simple, Visual, and Interactive

The THORS *Embedded Systems Programming* course serves as a foundational guide to understanding the process of programming for embedded systems. This course provides an interactive learning experience, enabling learners to explore the hardware and software of embedded systems and gain knowledge of programming in an Integrated Development Environment (IDE).

Credit Hours	2

Learning Objectives

- Define embedded systems programming.
- Identify the input devices and output devices of embedded system products.
- Recognize the elements found on development boards.
- Develop an understanding of how input and output devices are integrated with the development board.
- Describe how embedded systems programming is performed in an Integrated Development Environment (IDE).

Table of Contents

I. Embedded Hardware

- **Development Boards**
  - ◘ Elements
  - ◘ Types
    - Ready-Made Development Boards
    - Custom Development Boards
- **Input or Output (I/O) Devices**
  - ◘ Input Devices
  - ◘ Output Devices
- **Integration**
  - ◘ Physical Hardware Integration
  - ◘ Simulated Hardware Integration

II. Embedded Software

- **Programming**
  - ◘ C Programming
    - Basic Components
    - Writing a C Program
  - ◘ Embedded C Programming
    - Setup Code
    - Main Code
- **Integrated Development Environment (IDE)**
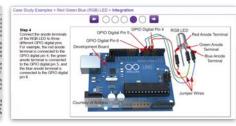 - ◘ Programming in an IDE
    - Configuring

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II. Embedded Software *(continued)*

- Coding
- Compiling
- Uploading
  - ◘ Types

III. Case Study Examples

- **Single-Color LED**
  - ◘ Integration
  - ◘ Programming
- **Red Green Blue (RGB) LED**
  - ◘ Integration
  - ◘ Programming

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