



ARM Cortex-M3/M4 System Design

Summary:

This course is designed for those who are involved in designing systems based around the ARM Cortex-M3 or Cortex-M4 processor core. Including an introduction to the ARM product range and supporting IP, the course covers the Cortex-M3 core architecture, programmers' model, instruction set and bus architecture. The CoreSight debug architecture is also covered as relevant to the Cortex-M3/M4.

Prerequisites:

- Some knowledge of embedded systems
- Familiarity with digital logic and hardware/ASIC design issues
- Knowledge of programming in C
- Experience of programming in assembler is useful but not essential
- A basic awareness of ARM is useful but not essential

Audience:

This course is intended for hardware design engineers who need to understand the issues involved when designing SoC's around the Cortex-M3/M4 processor core. It is also intended for software engineers developing for systems designed around the Cortex-M3/M4 core. The software development parts of this course refer to ARM development tools such as Keil MDK-ARM. However, much of this material is relevant to users of 3rd party ARM tools.

Length:

4 days

Modules:

- Introduction to ARM
- Cortex-M3/M4 Overview
- Tools Overview for ARM Microcontrollers
- ARMv7-M Programmers Model
- ARMv7-M Assembly Programming
- CMSIS Overview
- Cortex-M3/M4 Processor Core
- AHB-Lite
- APB
- Cortex-M3/M4 System Interfaces
- ARMv7-M Exception Handling
- Cortex-M3/M4 Clocks, Reset & Power
- SysTick Timer
- ARMv7-M Memory Model
- ARMv7-M Memory Protection
- ARMv7-M Synchronization
- ARMv7-M Compiler Hints and Tips
- ARMv7-M Linker Hints and Tips
- Embedded Software Development
- Introduction to CoreSight
- ARMv7-M Debug
- Cortex-M3/M4 Implementation
- Cortex-M3/M4 Example System
- Cortex-M System Design Kit
- ARMv7-M Extensions (optional)