



ARM Cortex-M3/M4 Hardware Design

Summary:

This course is designed for those who are designing hardware based around the ARM Cortex-M3/M4 core. Including an introduction to the ARM product range and supporting IP, the course covers the ARMv7-M instruction set and exception handling, Cortex-M3/M4 implementation, power management, memory protection and AMBA on-chip bus architecture. The Cortex-M3/M4 debug architecture is also covered. The course includes a number of worked examples to reinforce the lecture material.

Prerequisites:

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

Audience:

Hardware design engineers who need to understand the issues involved when designing SoC's around the ARM Cortex-M3/M4 core.

Length:

3 days

Modules:

- Cortex-M3/M4 Introduction
- ARMv7-M Programmers Model
- ARMv7-M Assembler Programming
- Cortex-M3/M4 Microarchitecture
- AMBA AHB-Lite
- AMBA APB
- Cortex-M3/M4 System Interfaces
- ARMv7-M Exception Handling
- Cortex-M3/M4 Clocks, Resets, Power
- SysTick Timer
- ARMv7-M Memory Model
- ARMv7-M Memory Protection
- Cortex-M4 Details (Optional)
- Cortex-M3/M4 Debug & Trace Overview
- Cortex-M3/M4 Trace
- Cortex-M3/M4 Examples
- Cortex-M3/M4 Implementation
- Cortex-M System Design Kit (Optional)
- ARMv7-M Extensions (Optional)