

Arm-Cortex-M-Efficient-System-Design-and-Development

Summary

Arm Cortex-M training courses are designed to help engineers working on new or existing Cortex-M system designs. Whether you're working on design, verification, validation, or developing software for a Cortex-M system, the course can be **configured according to your team's needs**.

Courses include fundamental topics to enable a solid platform of understanding. The rest of the course then builds on from this with optional topics and can be tailored appropriately. Some key topics are delivered via **pre course on-demand video**.

Learning activities such as interactive workbooks, walkthrough examples and quizzes are incorporated into the training to help bring the learning to life.

A **pre course call** with the engineer delivering the training will help you discuss your team's individual training requirements.

At the end of the course delegates will be able to:

- Describe different Cortex-M processors features and their use.
- Explain the fundamentals of the M-profile architecture.
- Identify and solve key Cortex-M system design issues.
- Make appropriate system design choices.
- Decide on the best configuration options for their system.
- Develop standardised and efficient software for Cortex-M processor.
- Debug issues on Cortex-M processors.

Course Length	Delivery Method	Location
2-4 days	Classroom	Virtual or Onsite

Audience

- Embedded Software Engineers
- Firmware Engineers
- Hardware Design Engineers
- Security Engineers
- System Architects
- Technical Authors
- Validation/Verification Engineers
- Project/Product Managers

Prerequisites

- Knowledge of programming in C.
- Experience of assembler programming is not required but would be beneficial.
- Knowledge of embedded systems.
- A basic awareness of Arm is useful but not essential.

Related Products

Armv6-M, Armv7-M, Armv8-M, Armv8.1-M, Cortex-M, Cortex-M0, Cortex-M0+, Cortex-M1, Cortex-M3, Cortex-M4, Cortex-M7, Cortex-M23, Cortex-M33, Cortex-M35P, Cortex-M55, SC000, SC300, SecurCore, IoT, M-profile, PSA, TrustZone, DSP, Helium

Topics

Agendas will be created from the following list of fundamental and optional topics

Fundamental Topics	Optional Architecture & Software Development Topics	Optional Hardware Design Topics
<ul style="list-style-type: none"> • Introduction to the Arm Architecture ♥ • Introduction to Armv7-M ♥ • Introduction to Armv8-M ♥ • Introduction to Armv8.1-M • Introduction to TrustZone for M-profile ♥ • CMSIS Overview ♥ • Cortex-M Overview • Programmers Model • Memory Model • Exception Handling • Debug and Trace • Migrating from other Arm Systems • Physical Protection (SecurCore and Cortex-M35P only) 	<ul style="list-style-type: none"> • Assembly Language Programming • Booting & Initialisation • Compiler and Linker Fundamentals • Further Compiler Hints and Tips • Further Linker Hints and Tips • Synchronization • Cache Management • MPU Programming • Security Extension (TrustZone-M) • Floating-point Extension • DSP Extension • MVE (Helium) – M55 • Arm Platform Security Extension (PSA) 	<ul style="list-style-type: none"> • Custom Instructions • Cortex-M Processor Core • AMBA AHB • AMBA APB • AMBA AXI • Cortex-M Clocks, Reset and Power Management • SysTick Timer • Introduction to CoreSight • Cortex-M Configuration • Cortex-M System Interfaces • Micro Trace Buffer (MTB) • Safety Features (Cortex-M7 only)

♥ = Online and on-demand.

Related face-to-face and on-demand courses

- CoreSight Training
- Cryptocell-312 Training
- Introduction to Arm DS ♥
- Introduction to Keil MDK ♥
- Introduction to Fast Models ♥
- PSA Threat Analysis

- Programmers Model
- Memory Model
- Memory Protection
- Assembly Language Programming
- Cortex-M23 Processor Core
- AMBA 5 AHB
- Exception Handling
- Clocks, Reset and Power
- SysTick Timer
- Debug & Trace
- Introduction to CoreSight
- Security Extension
- Cortex-M23 Configuration
- Cortex-M23 System Interfaces

"Cortex-M33 System Design" (4 Days - combined Hardware Design and Software Development course)

- Cortex-M33 Overview
- Programmers Model
- Memory Model
- AMBA 5 AHB
- Cortex-M33 Processor Core
- Assembly Language Programming
- Exception Handling
- Cortex-M33 Clocks, Reset and Power
- SysTick Timer
- Debug
- MPU Programming
- Security Extension
- Synchronization
- Compiler Hints and Tips
- Booting and Initialisation
- Introduction to CoreSight
- Debug & Trace
- Cortex-M33 Configuration
- Cortex-M33 System Interfaces