Course Description

This course demonstrates the tools and techniques required for embedded software design and development using the AMD Vitis™ Unified IDE.

The emphasis of this course is on:

- Reviewing the basics of the embedded software development flow
- Exploring the terminology and features of the Vitis Unified IDE
- Developing bare-metal and Linux® applications
- Debugging applications using the Vitis Unified IDE
- Using the Vitis Python™ command line interface
- Migrating from the classic Vitis IDE to the Vitis Unified IDE

What's New for 2025.2

- All labs have been updated to the latest software versions

Level – Embedded Software 1

Course Details

- 1 day ILT or 2 sessions/19

Course Part Number – EMBD VITIS

Who Should Attend? – Existing classic Vitis IDE users or new embedded developers interested in software development

Prerequisites

- C or C++ programming experience, including general debugging techniques
- Conceptual understanding of embedded processing systems as it relates to the AMD ecosystem (specifically writing and modifying scripts, user applications, and boot loader operation)

Software Tools

- Vitis Unified IDE 2025.2

Hardware

- Zynq™ UltraScale+™ MPSoC ZCU104 board*
- Versal™ adaptive SoC VCK190 board*

* This course focuses on the Zynq UltraScale+ MPSoC and Versal adaptive SoC architectures. Check with your local Authorized Training Provider for the specifics of the in-class lab environment or other customizations.

After completing this comprehensive training, you will have the necessary skills to:

- Develop and deploy an application on an AMD embedded system using the AMD Vitis Unified IDE
- Develop an application on an AMD embedded system using the Python command line interface
- Migrate an existing classic Vitis IDE project to the Vitis Unified IDE

Course Outline

- **Overview of Embedded Software Development**
  Overview of the process for building an embedded software application. {Lecture}

- **Driving the AMD Vitis Unified IDE**
  Introduces the terminology and features of the Vitis Unified IDE and talks about the basic behaviors required to drive the Vitis Unified IDE to generate a C/C++ application. {Lecture, Lab}

- **Bare-metal Application Development**
  Covers the various software components, or layers, supplied by AMD that aid in the creation of low-level software. The basic bare-metal application development flow is also discussed. {Lecture, Lab}

- **Linux Software Application Development**
  Highlights important parts of the underlying Linux system as it pertains to applications. {Lecture, Lab}

- **Debugging Using the AMD Vitis Unified IDE**
  Describes the basics of actually running the Vitis Unified IDE system debugger and illustrates the debugging process. {Lecture, Lab}

- **Using Python APIs in the AMD Vitis Unified IDE**
  Introduces the Python-based command line interface and illustrates how to interact with and create projects in the Vitis Unified IDE using Python APIs. {Lecture, Lab}

- **Migrating to the AMD Vitis Unified IDE**
  Reviews how to migrate existing classic Vitis IDE projects to the Vitis Unified IDE. {Lecture}