Get your team started with training

Engineers around the world use Green Hills Software’s real-time operating systems and software development tools to develop embedded products with unmatched security, reliability, and performance—in the least time and at the lowest cost.

Green Hills expert training provides the most direct route to understanding and leveraging the full potential of our products, enabling you to reach maximum productivity in the shortest time.

With our open enrollment training, teams with limited training budgets can attend our most popular courses at pre-selected locations in the United States and Europe. These classes are also perfect for new hires who have just joined a team that has already completed a Green Hills Software.

Three courses are offered:

▲ MULTI® IDE training
▲ INTEGRITY® RTOS training
▲ INTEGRITY RTOS BSPs and device driver training

All Green Hills Software training classes are taught by experts with hands-on experience developing with Green Hills tools.

For a list of upcoming course dates and locations, visit the MULTI/INTEGRITY course or BSP course information pages at www.ghs.com.

For a schedule of upcoming dates and locations—and to register for a course, visit

MULTI IDE training

This two-day course provides complete exposure to the MULTI integrated development environment (IDE), teaching students how to fully tap into all of its powerful capabilities while developing their applications.

The first day covers the basics of using the MULTI IDE. Students will learn how to create, build, and customize MULTI projects as well as how to connect to targets and download and debug applications. Through both lectures and hands-on exercises, students will learn the full extent of the MULTI debugger’s capabilities.

The second day covers how to use advanced tools—such as the Profiler and EventAnalyzer—to analyze and tune applications for performance and memory usage. Students will also learn advanced techniques for using Green Hills Software’s kernel-aware debugger to quickly find difficult bugs.

Topics covered

▲ Building and debugging applications
▲ Advanced debug tools (EventAnalyzer, Profiler, run-time error checking)
▲ Customizing the MULTI IDE

In this three-day course, students are taught how to apply known RTOS concepts, such as task control and scheduling to the INTEGRITY RTOS. Additionally, students are taught the underlying INTEGRITY data structures and communications mechanisms, including how to incorporate these features into their applications.

INTEGRITY RTOS training

Developed from the ground-up to be secure and reliable, the INTEGRITY RTOS takes full advantage of a processor’s MMU or MPU to provide a fully memory-protected system. Students learn to leverage this advanced technology in their
applications. Advanced concepts, such as sharing memory between applications, are discussed in detail.

The INTEGRITY RTOS provides a great degree of flexibility. Consequently, there are often several alternative mechanisms developers can use to accomplish a specific objective, such as intertask communication. This course discusses each mechanism in detail, so that students can understand which method would work best in their applications.

Topics covered
▲ Tasks and scheduling
▲ Inter-task communication
▲ Memory Management
▲ Clocks and alarms
▲ Synchronization
▲ Sharing objects

INTEGRITY BSPs and device drivers

This is a five-day course, with exercises for each section of the course. Students will be exposed to the complete process from bringing up a new/untested board to booting from an INTEGRITY Application burned into flash.

We start with an overview of INTEGRITY’s startup sequence, and then explore each step of the process in detail. At the beginning of the course, students are given a template of a BSP. Working with provided hardware, the students will construct the pieces needed for the BSP. By the end of the course, students will have created a complete working BSP.

While BSPs can be different for different processors and peripherals, the course aims to educate students on the framework of constructing a BSP. Students will be able to take the framework shown in class, and extend this knowledge for their custom boards. Students will understand what sections of the BSP are provided by Green Hills, and where they need to make customizations for specific boards.

Topics covered
▲ How to reserve memory for device drivers and when memory is available for kernel and application code
▲ How INTEGRITY handles interrupts with minimum latency, and how to write device drivers to take advantage of this feature
▲ How to connect and configure Green Hills’ hardware probes for a new board
▲ How to add timers and clocks to an INTEGRITY system

Advanced and customized training

Along with the basic open-enrollment MULTI and INTEGRITY courses, Green Hills Software offers a range of advanced courses covering topics such as:
▲ real-time programming with INTEGRITY
▲ custom data visualization and scripting in MULTI
▲ advanced trace and TimeMachine debugging
▲ INTEGRITY filesystems and networking

For larger teams who want to fully customize their training, classes can be taught at your facility and on your schedule, providing maximum value with minimal interruption.