



RTEMS Training Class

**Register Online at
www.rtems.com**

Cost:

\$4500 per student USD

A minimum of 3 attendees is required to hold the class.

**On-Line Applications
Research (OAR)
Corporation**

620 Discovery Dr NW
Building 2 Suite 375
Huntsville, AL 35806
www.oarcorp.com

Phone: 256-722-9985

Email: SalesAndInfo@oarcorp.com

The **RTEMS Training Class** is a 1-week course including both the **RTEMS Kick Start** and the **RTEMS Open Class**.

The **Kick Start** is a hands on, 1-day seminar focused on setting up the RTEMS development environment and then using those tools to build RTEMS and execute RTEMS applications. Over the rest of the week the **Open Class** is presented to cover the basics of real-time programming, the Classic and POSIX APIs, and the art of developing Board Support Packages (BSP) and device drivers.

The RTEMS Kick Start:

Training typically begins with the Kick Start day, which covers building and installing the RTEMS development environment. The next step is to configure and build the RTEMS kernel for multiple BSPs and architectures. The choice of BSPs will depend upon the interest of the class attendees, but it is usually some combination of the SPARC, PowerPC, ARM, AArch64, and x86. Then, several user applications will be built using the RTEMS cross-compilation tools. These are chosen from the RTEMS sample tests to show the features in the GNU Debugger. The tests will be run on a CPU simulator like QEMU since it provides excellent debugging support in-place of using real hardware.

Assumptions:

- Attendees will use their own computer.
- Prerequisite instructions will be shared which include the setup on a GNU/Linux distribution.
- Linux platforms are best for the class as compilation times on Windows hosts are significantly slower.



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The RTEMS Open Class:

The Real-Time Introduction is a comprehensive investigation of the requirements of real-time systems including explanations of various related topics. Embedded systems, real-time system characteristics, hard versus soft real-time, criticality are all examined in this section. It also compares the differences between a real-time operating system and a real-time executive by demonstrating the capabilities and benefits of each. This introduction discusses the tremendous benefits of portable code and explains the different levels of portability. Cross development is another important aspect of embedded systems dealt with in this class. This explanation includes discussions of host versus target platforms as well as cross development tool-sets like GNU. The Real-Time Introduction concludes with a section illustrating the concepts behind real-time tasking design, which defines a real-time task and its attributes such as priority and concurrency.

The Classic and POSIX API section is a thorough introduction to the standards-based APIs available to the RTEMS application programmer. The full spectrum of RTEMS concepts are presented, from basic terminology and general requirements to focused issues like processes and threads, synchronization, memory management, message passing, and device specific functions. A series of RTEMS examples are presented to help the user in understanding how the APIs may be used to solve specific problems. The POSIX (1 & 1b) functionality is covered since it is included in RTEMS. This curriculum also addresses the means by which RTEMS services interact with the RTEMS SuperCore. Techniques for debugging common problems and performance issues that impact real-time systems will be presented.

The Board Support Package (BSP) and Device Driver section thoroughly details semantics associated with building and maintaining BSPs and device drivers. Upon its completion, attendees should be comfortable with the idea of incorporating RTEMS into their platform. RTEMS components covered include: Clock, Timer, Real-Time Clock, Console, Initialize, Linker, Makefiles, Networking, Shared Memory, Support Routines, Target Dependencies, Debugging, and Performance Monitoring.



RTEMS

RTEMS Class Registration

Please fill out this form and email it to SalesAndInfo@OARcorp.com.

Student Information

Student Name: _____

Phone: _____ Email: _____

Company Name: _____

Address: _____

Street

City

State

ZIP Code

For any additional students from the same company, please provide names and email addresses.

1. _____ 3. _____

2. _____ 4. _____

Class Information

RTEMS Class Dates: _____

Class Attending	Cost	Quantity	Subtotals
RTEMS Training Class	\$4,500	X	=
		X	=
		X	=
			Total:

Payment Information

Payment must be made at the time of registration. OAR can accept credit cards, company checks, purchase orders, and electronic transfers. There is a 3.5% processing fee for all credit card payments. Upon receipt of this registration form, OAR will contact the person listed below for payment.

Contact Name: _____

Phone Number: _____

Email Address: _____