Windows Programming using the WIN32 API	*5 Days*

Course Aims:

This course is designed to provide developers, who already have some C++ experience, with the experience they need to develop windows based C++ applications using the WIN32 API.

Course Outline:

Windows Overview:
- Evolution
- Design goals
- Windows versions
- Multitasking and input model
- Scaleability

Programming Interface Overview:
- Supported features
- Introduction to the API
- Introduction to the development environment
- Using the debugger

Virtual Memory Management:
- Dynamic memory allocation & Heap management
- Managing paged virtual memory
- Shared memory with file-mapping objects

Multitasking:
- Creating and controlling multiple processes & threads
- Thread local storage
- Thread scheduling
- Asynchronous input issues
- Application structure
- Multitasking issues and strategies for use

Thread Synchronisation:
- Kernel synchronisation objects
- Critical Sections and Interlocked variables
- Avoiding deadlocks

Structured Exception Handling:
- Exception types
- Structured exception-handling architecture
- Signal handling
- Termination handlers
- C++ issues

Dynamic Linking:
- Building DLLs
- Load-time and run-time linking
- Data scope and DLLs
- Rebasing
- Initialisation and termination

The Registry:
- Using the registry API
- Hives, keys and values
- Dynamic registry entries
- Install/uninstall programs

File I/O:
- File system architectures
- File and console operations
- Filenames and UNC
- File change notifications
- Asynchronous file system access
- Mapping files into memory

Pipes and Mailslots:
- Anonymous pipes
- Named pipes
- Server models
- Mailslots

Windows Security:
- Introduction to the Windows security model
- Privileges
- Simple use of the security APIs

IPC using Winsock:
- Introduction to sockets
- Winsock 1.1 API
- Streams
- Datagrams
- Client and Server designs

RPC Fundamentals:
- Basic theory
- Microsoft RPC
- Writing a simple client and server

Services:
- Service model
- Installing services
- Writing Win32 services
- Techniques for debugging services
- Event logging

Target Audience:

Experienced developers such as existing Windows programmers, or those migrating from other platforms, who require hands-on experience of programming the Win32 API. It is also suitable for programmers who are using MFC and would like to understand the code behind the framework, or access those features unsupported by MFC.

Assumed Knowledge:

Delegates must have three months of day-to-day experience of C or C++. Windows user-interface programming experience is not a requirement, but knowledge of MFC would be advantageous.