PowerShell Basic to Intermediate Level Training Course
Duration: 5 days (20 Hours)

Day 1: Introduction to PowerShell (4 Hours)

Module 1: Introduction to PowerShell

- Overview of PowerShell: History, uses, and benefits
- PowerShell Editions: Windows PowerShell vs. PowerShell Core
- PowerShell Console vs. PowerShell ISE vs. Visual Studio Code

Module 2: Basic Commands and Navigation

- Cmdlets: Understanding cmdlets and their naming conventions
- Basic Cmdlets: Get-Help, Get-Command, Get-Member
- Navigation: Get-ChildItem, Set-Location, Get-Location
- Manipulating Files and Directories: New-Item, Copy-Item, Move-Item, Remove-Item

Module 3: Working with Providers

- Understanding Providers: FileSystem, Registry, Environment, etc.
- Using the FileSystem Provider: Navigating and manipulating files
- Using the Registry Provider: Accessing and modifying the registry

Day 2: PowerShell Scripting Basics (4 Hours)

Module 4: Variables and Data Types

- Variables: Declaring and using variables
- Data Types: Strings, integers, arrays, hash tables
- Operators: Arithmetic, comparison, logical operators

Module 5: Basic Scripting

- Scripts: Writing and running .ps1 files
- Conditional Statements: if, else, elseif
- Loops: for, foreach, while, do-while
- User Input: Read-Host

Module 6: Functions and Modules

- Functions: Creating and using functions
- Modules: Importing and using modules
- Built-in Modules: Overview of common modules like Microsoft.PowerShell.Management and Microsoft.PowerShell.Utility

Day 3: Intermediate PowerShell Techniques (4 Hours)

Module 7: Working with Objects and the Pipeline

- Objects: Understanding objects and properties
- Pipeline: Using the pipeline to pass objects
- Filtering and Formatting: Where-Object, Select-Object, Sort-Object, Format-Table, Format-List

Module 8: Error Handling and Debugging

- Error Handling: Try, Catch, Finally
- Common Error Types: Terminating vs. non-terminating errors
- Debugging Tools: Write-Debug, Write-Verbose, Set-PSDebug

Module 9: Remote Management and Scripting

- Remoting: Invoke-Command, Enter-PSSession, New-PSSession
- Background Jobs: Start-Job, Get-Job, Receive-Job
- Scheduled Tasks: Creating and managing scheduled tasks

Day 4: Advanced Scripting and Automation (4 Hours)

Module 10: Advanced Functions and Script Modules

- Advanced Functions: Using CmdletBinding, parameter validation
- Script Modules: Creating reusable script modules

Module 11: Working with APIs and Web Services

- REST APIs: Using Invoke-RestMethod and Invoke-WebRequest
- JSON and XML: Parsing and generating JSON and XML data

Module 12: PowerShell in CI/CD and Automation

- Integrating with CI/CD Tools: Using PowerShell with Jenkins, Azure DevOps, GitHub Actions
- Automating Administrative Tasks: Common automation scenarios in Windows administration

Day 5: PowerShell Best Practices and Real-World Scenarios (4 Hours)

Module 13: PowerShell Best Practices

- Coding Standards: Naming conventions, script structure
- Documentation: Commenting, Get-Help documentation
- Security: Understanding execution policies, signing scripts

Module 14: Real-World Scripting Scenarios

- Sample Projects: Creating user accounts, managing services, network configuration
- Case Studies: Reviewing real-world use cases and solutions

Module 15: Resources and Further Learning

- Learning Resources: Books, online courses, community forums
- Certification Paths: Microsoft Certified: PowerShell certifications
- Continuous Learning: Keeping up with updates and community contributions