

## Course Outline

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### 10961-Automating Administration with Windows PowerShell



**Duration:** 5 days (30 hours)

#### Target Audience:

This course is intended for IT Professionals already experienced in general Windows Server and Windows Client administration or already experienced in administering and supporting Application servers and services including applications like Exchange, SharePoint, and SQL. It is broadly intended for students who want to use Windows PowerShell to automate administrative tasks from the command line, using any Microsoft or independent software vendor (ISV) product that supports Windows PowerShell manageability.

This course is not intended to be a scripting or programming course, and includes only basic coverage of scripting and programming topics. Students are not expected to have prior scripting or programming experience, and are not expected to have prior Windows PowerShell experience

#### Prerequisites:

Before attending this course, students must have:

- Previous Windows Server and Windows Client management knowledge and hands on experience.
- Experience installing and configuring Windows Server into existing enterprise environments, or as standalone installations.
- Knowledge and experience of network adapter configuration, basic Active Directory user administration, and basic disk configuration.
- Knowledge and hands on experience specifically with Windows Server 2012 and Windows 8 would be of benefit but is not essential.

#### Topics Covered:

- Module 1: Getting Started with Windows PowerShell
  - Overview and Background
  - Finding and Learning Commands
  - Running Commands
    - Lab : Configuring Windows PowerShell
      - Configure the Windows PowerShell Console Application
      - Configure the Windows PowerShell ISE Application
    - Lab : Finding and Running Basic Commands
      - Finding Commands
      - Finding and Running Commands
      - Using "About" Files

After completing this module, students will be able to:

- Open and configure Windows PowerShell
- Discover, learn, and run Windows PowerShell commands
- Run commands by using correct command and parameter syntax

➤ Module 2: Working with the Pipeline

- Understanding the Pipeline
- Selecting, Sorting, and Measuring Objects
- Converting, Exporting, and Importing Objects
- Filtering Objects Out of the Pipeline
- Enumerating Objects in the Pipeline
  - Lab : Using the Pipeline
    - Selecting and Sorting Data
  - Lab : Converting, Exporting, and Importing Objects
    - Converting Objects
    - Importing and Exporting Objects
  - Lab : Filtering Objects
    - Filtering Objects
  - Lab : Enumerating Objects
    - Enumerating Objects

After completing this module, students will be able to:

- Describe the purpose of the Windows PowerShell pipeline
- Manipulate objects in the pipeline
- Convert, export, and import objects
- Filter objects out of the pipeline
- Enumerate objects in the pipeline

➤ Module 3: Understanding How the Pipeline Works

- Passing Data in the Pipeline By Value
- Passing Data in the Pipeline By Property Name
  - Lab : Working with Pipeline Parameter Binding
    - Predicting Pipeline Behavior

After completing this module, students will be able to:

- Pass data by using the ByValue technique
- Pass data by using the ByPropertyName technique

➤ Module 4: Using PSProviders and PSDrives

- Using PSProviders
- Using PSDrives
  - Lab : Using PSProviders and PSDrives
    - Create a New Folder
    - Create a New PSDrive
    - Create a New Registry Key
    - Create a New Registry Setting
    - Modify a WS-Management Setting

After completing this module, students will be able to:

- Explain the purpose and use of PSProviders
- Explain the purpose and use of PSDrives

➤ Module 5: Formatting Output

- Using Basic Formatting
- Using Advanced Formatting
- Redirecting Formatted Output
  - Lab : Formatting Output
    - Formatting Command Output
    - Reproducing Specified Output

After completing this module, students will be able to:

- Format command output by using basic formatting commands
- Format command output by using advanced formatting options
- Redirect formatted output

➤ Module 6: Querying Management Information by Using WMI and CIM

- Understanding WMI and CIM
- Querying Data with WMI and CIM
- Making Changes by Using WMI and CIM
  - Lab : Working with WMI and CIM
    - Querying Information by Using WMI
    - Querying Information by Using CIM
    - Invoking Methods

After completing this module, students will be able to:

- Explain the differences between WMI and CIM
- Query management information by using WMI and CIM
- Invoke methods by using WMI and CIM

➤ Module 7: Preparing for Scripting

- Using Variables
- Scripting Security
  - Lab : Working with Security in Windows PowerShell
    - Configure Security

After completing this module, students will be able to:

- Create, use, and manage variables
- Configure shell scripting security

➤ Module 8: Moving From a Command to Script to Module

- Moving From Command to Script
- Moving From Script to Function to Module
- Implementing Basic Error Handling
- Using Basic Scripting Constructs
- Exploring Other Scripting Features
  - Lab : Moving From Command to Script
    - Test the Command
    - Parameterize Changing Values
    - Add Verbose Output
    - Add Comment-Based Help
  - Lab : Moving From Script to Function to Module
    - Convert the Script to a Function

- Save the Script as a Script Module
- Add Debugging Breakpoints
- Lab : Implementing Basic Error Handling
  - Add Error Handling to a Function
  - Add Error Handling to a New Function
- Lab : Creating an Advanced Function
  - Test an Existing Command
  - Create a Parameterized Function
  - Handle Multiple Targets
  - Add Error Handling

After completing this module, students will be able to:

- Move from Command to Script
- Move from Script to Function to Module
- Implement basic error handling
- Implement basic scripting constructs
- Explain additional advanced Windows PowerShell scripting features

#### ➤ Module 9: Administering Remote Computers

- Using Basic Remoting
- Using Advanced Remoting Techniques
- Using Remoting Sessions
  - Lab : Using Basic Remoting
    - Enable Remoting on the Local Computer
    - Performing One-to-One Remoting
    - Performing One-to-Many Remoting
  - Lab : Using Remoting Sessions
    - Using Implicit Remoting
    - Multicomputer Management

After completing this module, students will be able to:

- Describe remoting architecture and security, manually enable remoting, and use remoting for one-to-one and one-to-many connections
- Pass local variables to remote computers
- Create and manage persistent remoting sessions, and use implicit remoting

#### ➤ Module 10: Putting it All Together

- Provisioning a New Server Core Instance
  - Lab : Provisioning a New Server Core Installation
    - Create a Parameterized Script
    - Get the Dynamic IP Address of the New Server Core Computer
    - Create a DHCP Reservation for the Server Core Instance
    - Modify the Local TrustedHosts List
    - Add a Role to the Server Core Instance
    - Add the Server Core Instance to the Domain
    - Test the Completed Script

After completing this module, students will be able to:

- Plan your Windows PowerShell Script
- Configure Server Core computers using Windows PowerShell

➤ Module 11: Using Background Jobs and Scheduled Jobs

- Using Background Jobs
- Using Scheduled Jobs
  - Lab : Using Background Jobs
    - Starting Jobs
    - Managing Jobs
  - Lab : Using Scheduled Jobs
    - Creating a Scheduled Job

After completing this module, students will be able to:

- Create and manage Background Jobs
- Create and manage Scheduled Jobs

➤ Module 12: Using Profiles and Advanced PowerShell Techniques

- Using Advanced PowerShell Techniques
- Creating Profile Scripts
- Working With Alternative Credentials
  - Lab : Practicing Advanced Techniques
    - Using Advanced Techniques
    - Using Alternative Credentials
    - Create a Profile Script

After completing this module, students will be able to:

- Manipulate data and objects by using advanced techniques and operators
- Create and manage profile scripts
- Connect to remote computers by using alternative credentials