

## **Advanced Automated Administration with Windows PowerShell (MS-10962)**

**Modality:** Virtual Classroom

**Duration:** 3 Days

**SATV Value:** 3

**CLC:**

**NATU:**

**SUBSCRIPTION:** Master

### **About this Course:**

The course will educate students on the knowledge of automating various administrative activities through Windows PowerShell 5.1. Students will further understand the fundamental scripting skills including developing advanced functions, writing controller scripts, and management of script errors. Additionally, you will also inquire the functionality of Windows PowerShell Workflow, the REST API and XML and JSON formatted data files. Lastly, students will acquire the information about the utilization of new administration tools like Desired State Configuration (DSC) and Just Enough Administration (JEA) for configuration and security of servers.

A professional IT Administrator is able to make an average salary of **\$59,350** per year.

### **Course Objective:**

- After the course completion, the students should be able to:
- Create advanced functions
- Employ Microsoft .NET Framework and REST API in Windows PowerShell
- Write controller scripts
- Manage script errors
- Employ XML, JSON, and customized formatted data
- Enhance server management with Desired State Configuration (DSC) and Just Enough Administration (JEA)
- Perform analysis and debugging of scripts
- Understand Windows PowerShell workflow

### **Audience:**

This course is primarily aimed for:

- IT personnel who possess ample experience and knowledge in general Windows Server and Windows Client administration. Students are expected to display a prerequisite, fundamental knowledge of Windows PowerShell. Furthermore, the course also offers a thorough guidance in scripting for professional developers who work in development environments and deployment phases.

## Prerequisites:

- Besides a professional-level experience in hand, students who are interested in pursuing this course are also mandated to have the following technical expertise:
- Experience with technologies related to Windows networking and implementation.
- Practical exposure to Windows Server administration, maintenance, and troubleshooting processes.
- Hands-on knowledge in Windows Client administration, maintenance, and troubleshooting.
- Experience regarding utilization in Windows PowerShell for running commands and developing essential, non-modularized scripts.

## Course Outline:

### Module 1: Creating Advanced Functions

In this module students will learn how to parameterize a command into an advanced function. It is designed to teach several key principles in a single logical sequence, by using frequent hands-on exercises to reinforce new skills.

#### Lessons

- Converting a Command into an Advanced Function
- Creating a Script Module
- Defining Parameter Attributes and Input Validation
- Writing Functions that use Multiple Objects
- Writing Functions that Accept Pipeline Input
- Producing Complex Function Output
- Documenting Functions by using Content-Based Help
- Supporting -Whatif and -Confirm

#### Lab : Converting a Command into an Advanced Function

- Converting a Command into an Advanced Function

#### Lab : Creating a Script Module

- Creating a Script Module

#### Lab : Defining Parameter Attributes and Input Validation

- Defining Parameter Attributes and Input Validation

#### Lab : Writing Functions that use Multiple Objects

- Writing Functions that use Multiple Objects

#### Lab : Writing Functions that Accept Pipeline Input

- Writing Functions that Accept Pipeline Input

### **Lab : Producing Complex Function Output**

- Producing Complex Function Output

### **Lab : Documenting Functions by using Content-Based Help**

- Documenting Functions by using Content-Based Help

### **Lab : Supporting -Whatif and -Confirm**

- Supporting -Whatif and -Confirm

After completing this module, students will be able to:

- Parameterize a command and create an advanced function.
- Convert a script and function into a script module.
- Define parameter attributes and input validation for a function.
- Enumerate objects by using scripting constructs.
- Modify a function to accept pipeline input.
- Produce complex pipeline output in a function.
- Document a function by using comment-based Help.
- Create functions that support ?WhatIf and ?Confirm.

## **Module 2: Using Cmdlets and Microsoft .NET Framework in Windows PowerShell**

Windows PowerShell provides commands that accomplish many of the tasks that you will need in a production environment. Sometimes, a command is not available but the .NET Framework provides an alternate means of accomplishing a task. Because Windows PowerShell is built on the .NET Framework, it is able to access those alternate means. In this module, you will learn how to discover and run Windows PowerShell commands, and how to use .NET Framework components from inside Windows PowerShell. These two techniques will provide you with the most flexibility and capability for accomplishing tasks in a production environment.

### **Lessons**

- Running Windows PowerShell Commands
- Using Microsoft .NET Framework in Windows PowerShell

### **Lab : Using .NET Framework in Windows PowerShell**

- Using Static and Instance Members

After completing this module, students will be able to:

- Discover Windows PowerShell commands by using the Help system.
- Describe and use .NET Framework classes and instances in Windows PowerShell.

## **Module 3: Writing Controller Scripts**

In this module, students will learn how to combine tools ? advanced functions that perform a specific task ? and a controller script that provides a user interface or automates a business process.

## Lessons

- Understanding Controller Scripts
- Writing Controller Scripts that Show a User Interface
- Writing Controller Scripts That Produce Reports

### Lab : Writing Controller Scripts that Display a User Interface

- Write Functions to be Used in the Controller Script
- Write a Controller Script that Implements a Text-Based Menu

### Lab : Writing Controller Scripts That Produce HTML Reports

- Writing Functions To Be Used in the Controller Script
- Writing a Controller Script That Produces HTML Reports

After completing this module, students will be able to:

- Describe the difference between tools and controller scripts.
- Write controller scripts that present a user interface.
- Write controller scripts that automate a business process.

## Module 4: Handling Script Errors

In this module, students will learn how to perform basic error handling in scripts. The focus will be about how to add error handling to existing tools, primarily as a time-saving mechanism (instead of having students write new tools). A side benefit of this approach is that it will help build the skills that you must have to analyze and reuse existing code written by someone else.

## Lessons

- Understanding Error Handling
- Handling Errors in a Script

### Lab : Handling Errors in a Script

- Handling Errors in a Script

After completing this module, students will be able to:

- Describe the shell's default error response mechanisms.
- Add error handling code to existing tools.

## Module 5: Using XML Data Files

In this module, students will learn how to read, manipulate, and write data in XML files. XML files provide a robust, yet straightforward way to store both flat and hierarchical data. XML files are more flexible than CSV, more accessible for small amounts of data than SQL Server, and easier to code against than Excel automation.

## Lessons

- Reading, Manipulating and Writing Data in XML

### **Lab : Reading, Manipulating and Writing Data in XML**

- Testing the Provided Tools
- Updating an XML Inventory Document

After completing this module, students will be able to:

- Read, manipulate, and write data in XML.

### **Module 6: Managing Server Configurations by Using Desired State Configuration**

In this module, students will learn how to write Desired State Configuration (DSC) configuration files, deploy those files to servers, and monitor servers' configurations.

#### **Lessons**

- Understanding Desired State Configuration
- Creating and Deploying a DSC Configuration

### **Lab : Creating and Deploying a DSC Configuration**

- Writing, Running and Pushing a DSC Configuration

After completing this module, students will be able to:

- Describe the architecture and deployment models of DSC.
- Write and deploy DSC configuration files.

### **Module 7: Analyzing and Debugging Scripts**

In this module, students will learn how to use native Windows PowerShell features to analyze and debug existing scripts. These skills are also useful when students have to debug their own scripts.

#### **Lessons**

- Debugging in Windows PowerShell
- Analyzing and Debugging and Existing Script

### **Lab : Analyzing and Debugging and Existing Script**

- Analyzing and Debugging and Existing Script

After completing this module, students will be able to:

- Describe the debugging features of Windows PowerShell.
- Analyze and debug an existing script.

### **Module 8: Understanding Windows PowerShell Workflow**

In this module, students will learn about the features of the Windows PowerShell Workflow technology.

## Lessons

- Understanding Windows PowerShell Workflow

After completing this module, students will be able to:

- Describe the Workflow feature of Windows PowerShell.

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