

# Course Outline

## Microsoft Power Platform Developer Course PL-400T00: 5 days Instructor Led

### About this course

In this course, students will learn how to build Power Apps, Automate Flows and extend the platform to complete business requirements and solve complex business problems.

### Audience profile

Candidates for this course design, develop, secure, and troubleshoot Power Platform solutions. Candidates implement components of a solution that include application enhancements, custom user experience, system integrations, data conversions, custom process automation, and custom visualizations. Candidates will gain applied knowledge of Power Platform services, including in-depth understanding of capabilities, boundaries, and constraints. Candidates should have development experience that includes JavaScript, JSON, TypeScript, C#, HTML, .NET, Microsoft Azure, Microsoft 365, RESTful Web Services, ASP.NET, and Power BI.

### At course completion

After completing this course, students will be able to:

- How to build your first model-driven app with Dataverse
- Get started with model-driven apps in Power Apps
- Manage tables in Dataverse
- Create and manage columns within a table in Dataverse
- Working with choices in Dataverse
- Create a relationship between tables in Dataverse
- Define and create business rules in Dataverse
- Create and define calculation or rollup columns in Dataverse
- Get started with security roles in Dataverse
- Get started with Power Apps canvas apps
- Customize a canvas app in Power Apps
- Manage apps in Power Apps
- Navigation in a canvas app in Power Apps
- How to build the UI in a canvas app in Power Apps
- Use and understand Controls in a canvas app in Power Apps
- Document and test your Power Apps application
- Use imperative development techniques for canvas apps in Power Apps
- Create formulas that use tables, records, and collections in a canvas app in Power Apps
- Perform custom updates in a Power Apps canvas app
- Complete testing and performance checks in a Power Apps canvas app
- Work with relational data in a Power Apps canvas app
- Work with data source limits (delegation limits) in a Power Apps canvas app
- Connect to other data in a Power Apps canvas app
- Use custom connectors in a Power Apps canvas app
- Get started with Power Automate
- Build approval flows with Power Automate
- Introduction to expressions in Power Automate
- Introduction to Microsoft Power Platform developer resources
- Use developer tools to extend Microsoft Power Platform

- Introduction to extending Microsoft Power Platform
- Introduction to Dataverse for developers
- Extend plug-ins
- Performing common actions with client script
- Automate business process flows with client script
- Get started with Power Apps component framework
- Build a Power Apps component
- Use advanced features with Power Apps component framework
- Access Dataverse in Power Apps portals
- Extend Power Apps portals
- Build custom Power Apps portals web templates
- Work with Dataverse Web API
- Integrate Dataverse Azure solutions

## Course Outline

### Module 1: How to build your first model-driven app with Dataverse

- Discover the value and key features of Dataverse.
- Learn about the value and key features of model-driven apps.
- Explore sample model-driven template apps.

### Module 2: Get started with model-driven apps in Power Apps

- Learn about model-driven app design
- Create a model-driven app

### Module 3: Manage tables in Dataverse

- Tables in Dataverse.
- Types of tables that are available in Dataverse.
- Creating a custom table.
- Enabling attachments within a table.
- Which licensing requirements to apply to use each type of table.

### Module 4: Create and manage columns within a table in Dataverse

- Learn what a column is in Dataverse.
- Learn about the types of columns that are available in Dataverse.
- Add a column to a table.
- Learn what a primary name column is in Dataverse.
- Identify restrictions that are associated with columns.
- Create an auto-numbering column.
- Create an alternate key.

## Module 5: Working with choices in Dataverse

- Learn about choices.
- Explore the standard choices.
- Create a new choice or modify an existing one.

## Module 6: Create a relationship between tables in Dataverse

- Why you should segment data that is used by your solutions into many tables.
- Why you need to relate one table to another.
- How to build relationships between tables.
- How to select the proper relationship type when you're building solutions with Dataverse.

## Module 7: Define and create business rules in Dataverse

- Define business rules in Dataverse.
- Create and manage business rules in Dataverse.

## Module 8: Create and define calculation or rollup columns in Dataverse

- Define a rollup column.
- Create a rollup column.
- Identify a calculation column.
- Create a calculation column.

## Module 9: Get started with security roles in Dataverse

- Learn about security roles and apply them to users in an environment.
- Learn how to add users to an environment.
- Understand security concepts in Dataverse
- Identify default security roles.
- Create a custom role.
- Create a custom security role and assign it to entities and users.
- Learn how to configure Dataverse teams for security
- Learn how to configure Dataverse group teams for security

## Module 10: Get started with Power Apps canvas apps

- Explore how Power Apps can make your business more efficient.
- Learn how to use different technologies to perform different tasks in Power Apps.
- Learn about the different ways to build an app in Power Apps.
- Create your first app from data in an Excel workbook.

## Module 11: Customize a canvas app in Power Apps

- Change the layout of a gallery.
- Change the data that a control shows.
- Change the order in which fields appear.
- Change the control with which a user provides information.
- Explore controls on each screen of an app.
- Format a number as a price.
- Color prices based on their values.
- Explore formulas in a generated app.

## Module 12: Manage apps in Power Apps

- Learn how to view and restore app versions.
- Explore how to share an app, including permissions and notifications.
- Learn about what environments are, how to create them, and how to manage security.
- Find more information about Power Apps.

## Module 13: Navigation in a canvas app in Power Apps

- Understand how navigation works in a canvas app
- Use the Navigate and Back functions
- Understand the different ways these functions can be invoked

## Module 14: How to build the UI in a canvas app in Power Apps

- Understand the basics of building the UI through themes, icons, control customization, and images.
- Use personalization in a canvas app
- Understand the differences between the Tablet and Mobile form factors

## Module 15: Use and understand Controls in a canvas app in Power Apps

- Understand how to use controls in a canvas app
- Use the different types of controls
- Understand how Galleries and Forms related to controls

## Module 16: Document and test your Power Apps application

- Learn about the different types of test plans and components of a good test plan
- Identify and discuss optimization tools and performance tuning
- Learn about the benefits of documenting your application

## Module 17: Use imperative development techniques for canvas apps in Power Apps

- Understand imperative vs. declarative development

- Understand the variables in Power Apps
- Understand when to utilize each of the three different types of variables

## **Module 18: Create formulas that use tables, records, and collections in a canvas app in Power Apps**

- Utilize formulas that process multiple records
- Use the Concat function to combine text from multiple records
- Utilize the Countrows, CountIf, ForAll
- Perform math operations on data in a table

## **Module 19: Perform custom updates in a Power Apps canvas app**

- Use the Patch function to update your data
- Understand how the Defaults function is used to create new records with Patch
- Utilize the Remove and RemoveIf functions to delete records
- Determine whether to use Clear and Collect or ClearCollect in their scenario

## **Module 20: Complete testing and performance checks in a Power Apps canvas app**

- Use best practices to improve the performance of your app
- Understand how to best test an app
- Use fiddler for troubleshooting

## **Module 21: Work with relational data in a Power Apps canvas app**

- Understand relational data
- Use relational data to improve an app user's experience in Power Apps
- Understand how to use relational data in Microsoft Dataverse

## **Module 22: Work with data source limits (delegation limits) in a Power Apps canvas app**

- Understand the different limits of different data sources
- Understand how functions, predicates, and operators all play roles in the limits
- Use this new understanding to choose the best data source for an app

## **Module 23: Connect to other data in a Power Apps canvas app**

- Understand and use action-based connectors
- Integrate user information and user-profile information into a canvas app
- Use Power Automate with Power Apps

## **Module 24: Use custom connectors in a Power Apps canvas app**

- Understand custom connectors and the basics of how to build one
- Understand the custom connector lifecycle
- Use postman with a custom connector

## Module 25: Get started with Power Automate

- Create a flow that automatically saves email attachments
- Learn how to create a button flow to send yourself a reminder

## Module 26: Build approval flows with Power Automate

- Create and process approval requests
- Build a flow that runs at recurring time intervals
- Create a business process flow with conditions

## Module 27: Introduction to expressions in Power Automate

- Use one or more functions to create expressions.
- Use functions to retrieve data, change data, evaluate data, and more.

## Module 28: Introduction to Microsoft Power Platform developer resources

- Explain what solution components exist within Microsoft Power Platform.
- Explain key components of Microsoft Dataverse and the Common Data Model.
- Explain what Azure solution elements relate to Microsoft Power Platform.
- Explain what AI Solutions exist as it relates to Microsoft Power Platform.
- Navigate the Developer Guide successfully in support of their Microsoft Power Platform development efforts.

## Module 29: Use developer tools to extend Microsoft Power Platform

- Install NuGet packages available for Microsoft Power Platform development
- Work with the Configuration Migration tool
- Work with Package Deployer
- Leverage Solution Packager to isolate features
- Run the Plugin Registration Tool

## Module 30: Introduction to extending Microsoft Power Platform

- Identify which elements architecturally comprise Microsoft Power Platform.
- Learn about the areas of extensibility that are available to customize Microsoft Power Platform through code.
- Discover different approaches to common business scenarios in respect to achieving extensibility by means of configuration versus code.

## Module 31: Introduction to Dataverse for developers

- Explain what functions can be executed against Microsoft Power Platform via Microsoft Power Platform SDKs.
- Perform basic operations against Microsoft Power Platform such as create/read/update/delete operations.

## Module 32: Extend plug-ins

- Learn how to extend plug-ins.

## **Module 33: Performing common actions with client script**

- Write client script to perform common actions as listed in the module units.

## **Module 34: Automate business process flows with client script**

- Automate business process flow actions by using JavaScript/TypeScript API methods.

## **Module 35: Get started with Power Apps component framework**

- Learn about Power Apps component framework architecture.
- Learn about Power Apps component tooling.

## **Module 36: Build a Power Apps component**

- Create a custom Power Apps component.
- Create a code component solution package.
- Test and debug a code component.
- Learn key concepts of Dataverse auditing

## **Module 37: Use advanced features with Power Apps component framework**

- Use formatting API in a Power Apps component.
- Use Dataverse web API in a Power Apps component.

## **Module 38: Access Dataverse in Power Apps portals**

- Discover the portal components that are available to display and interact with Dataverse data on the portal.
- Identify the various features of the portal components.
- Display a list of data and an associated drill-down for details.
- Configure a table form to access individual records.
- Trigger classic Dataverse workflows from the portal.

## **Module 39: Extend Power Apps portals**

- Discover where software development can resolve particular portal feature requirements.
- Employ portal application lifecycle management for Power Apps portals.
- Apply JavaScript code to portal assets.
- Use Cascading Style Sheets (CSS) to address specific portal development requirements.

## **Module 40: Build custom Power Apps portals web templates**

- Learn about the relationship between web templates, page templates, and webpages.
- Discover how custom web templates can be built by using HTML, Cascading Style Sheets (CSS), Liquid, and JavaScript.
- Use Liquid template language to build and structure web templates.
- Learn how to embed custom CSS and JavaScript into web templates.
- Learn how to reference other web templates in a web template.

# Course Outline

## **Module 41: Work with Dataverse Web API**

- Interact with Dataverse Web API by using Postman.
- Authorize against Dataverse with OAuth.
- Use OData to query data.

## **Module 42: Integrate Dataverse Azure solutions**

- Publish Dataverse events to Microsoft Azure Service Bus.
- Write a Service Bus Event Listener that consumes Dataverse events.