Microsoft Dynamics 365: Finance and Operations Apps Developer

Trainer Preparation Guide

Update history

Date	Update
01Dec2019	Initial document
10Jan2020	Added information about labs through 6a

Design of the Course

The *Microsoft Dynamics 365: Finance and Operations Apps Developer* role-based instructor-led training course is an all-in-one course. It encompasses four "Learning Paths" (Overview, Build, Connect, Extend) spread out over ten modules.

The modules are:

1. Overview & Architecture
2. Developer Tools
3. Solution Design
4. AOT Elements
5. Code Development & Testing
6. Data Migration
7. Frameworks
8. Integration
9. Reporting
10. Security & Performance

Background Information

Role-based training focuses on the technical skills required to perform a job. Science shows the benefits of role-based learning, rather than software-based. Studies mention accuracy, context, and immediate value as some of the benefits.

Microsoft gathered several Subject Matter Experts (SMEs) from the field to list the skills needed to perform the tasks related to the role. These skills were used in creating this training course; they are also used in creating certification exams on a separate track.

Required Materials to Teach This Course

To teach each of the courses in this track, you need the following materials:

- Microsoft PowerPoint files
- Student manual
- Student lab manual – delayed

You should also ensure that the students have access to an all-in-one Dynamics 365 Finance and Operations Apps virtual machine. Lifecycle Services access is preferable, but not required.

Prerequisite Knowledge to Teach This Course

To successfully teach this course *Microsoft Dynamics 365: Finance and Operations Apps Developer*, instructors must have a working knowledge of Dynamics 365 for Finance and Operations, in both technical and functional capacities, and they should have prior experience as a Dynamics 365 user, administrator or consultant. Our SMEs felt that instructors for this course in particular should have personal knowledge rather than simply training experience. Instructors should have:

- Experience leveraging Microsoft Dynamics 365: Finance and Operations Apps
- Conceptual knowledge of object-oriented programming principles
- Experience extending Dynamics 365 for Finance and Operations

Preparation Tasks

Instructors should complete the following tasks to prepare for the course:

- Review all topics in the student manual. You should be well-versed in every topic.
- Review all PowerPoint slides.
- Be able to speak to each of the talking points on the slides.

- Be able to present key points from your own knowledge and experience.
- Review any Additional Reading links provided in the student manual. Again, present key points from this material to the students as the value-add that you provide as an instructor.
- Secure an environment for each learner to enable them to perform the student labs. You may provide your own – it should be a standard all-in-one VM with demo data. The technical specs should be at least D13v2 or better. You may also get the environments from an Authorized Lab Hoster in the Courseware Marketplace.
- The student labs are currently under testing and are thus delayed. When they are released, not only should you review the labs, but you should be able to successfully complete them so that you become familiar with any of the difficult points in the labs. This will prepare you for helping students in class. Note: The labs are written assuming experience – either object-oriented programming, earlier versions of the software, and/or Visual Studio. Most students these days have this, but if not, the instructor will be needed to bridge the gap.

Technical Preparation

The MB-500 course includes many different related technologies. It is designed to show how the Finance and Operations Apps can interact with both Microsoft and non-Microsoft software. Many of the modules progress from basic topics to advanced ones, and the labs build on each other to create a complete system by the end. Therefore, we do not recommend teaching only parts of the course.

Lab Preparation

The MB-500 course provides a set of lab instructions in the Student Lab Manual for each lab. These labs align with the content of certain modules within the course. The intention is for the instructor to present the material for a module and then students perform the related lab.

Almost all steps in the labs are performed in the Dynamics 365 Virtual Machine (VM) that learners acquire through a lab host. Since the labs are Dynamics 365-based and both the software and sample data update regularly, it is possible that some of the lab instructions may become out of sync with the updated system. While we try to update the lab instructions regularly, please be aware of this possibility.

A NOTE ABOUT THE LABS:

Dynamics has evolved over the years; no longer are we coding in a bubble.
Therefore, a responsible course will contain labs which integrate with and use external systems.
Sometimes it's tricky but we felt it important to the integrity of the course, in order to prepare learners for real world scenarios.

Feedback and suggestions are always welcome at https://aka.ms/TrainingSupport - please specify the course; in this case MB-500.

There are ten modules and thirteen labs. The initial design had at least one lab per module; however the lab originally designed for Module 2 required the use of LCS,
which is a tricky prerequisite for some learners. Therefore, we removed it and replaced it with an additional lab on another module.

Lab testing indicates that the times are for an experienced user. The labs may take longer depending on the Visual Studio and Dynamics experience of the learner.
The instructor should allow extra time to walk students through if they should get stuck.
It is CRUCIAL that the instructor be able to do these labs himself/herself, and they should include this in course preparation.

The labs were designed to be cumulative, and at the end, the learner will have a thorough set of new functionalities in both generic (Dynamics Dev Training) and customized (My Lab Airlines) format. The labs cover a wide variety of skills judged by subject matter experts to be commonly used by developers and their employers.

Some of the labs require resource files. Some require program downloads. They are located on the VMs which are distributed to our Authorized Lab Hosters.

As the labs are cumulative, it's important for students to not miss a lab. However, if needed, we have provided .axpp backups so that if necessary, for example if a student gets stuck in a lab, it will not block them from continuing the course. These are also located on the VMs.

As of January 10, 2020, Labs 1 through 6a are ready and released. The remaining labs will follow shortly.

Please find below a table of the labs:

Module	Lab	Time
01: Overview and Architecture	Lab 1 – Development Environment Configuration	15 mins
02: Developer Tools	No lab (see notes)	
03: Solution Design	Lab 3 – Data Structure Development	20 mins
04: AOT Elements	Lab 4 – Metadata Extension & Development	30 mins
05: Code Dev & Testing	Lab 5 – Code Extension & Development	85 mins
06: Data Migration	Lab 6a - Data Export/Import using Data Entity	30 mins

Lab environment (requirements) all-up	Labs
(Optional) A Lifecycle Services account with an environment created	1
A browser to run the user interface	4, 5, 6a, 6b, 7, 8a, 8c, 9, 10, xx
A Microsoft account (MSA) to run Microsoft Flow	xx
Access to the Azure portal at https://portal.azure.com and an Azure account, with an Azure pass which is provided to learners	6b, 8a, 8b

An all-in-one demo data VM	1, 3, 4, 5, 6a, 6b, 7, 8a, 8b, 8c, 9, 10, xx
An email account	8b
Visual Studio installed, and a Visual Studio subscription	1, 3, 4, 5, 6a, 6b, 7, 8a, 8b, 8c, 10, xx
The following are in the resources folder:	
Recurring Integration Scheduler, which may be downloaded from https://github.com/Microsoft/Recurring-Integrations-Scheduler/releases as Recurring.Integrations.Scheduler.Setup.exe and which may require .NET 4.7.2 which is also included	6b, 8a, 8b
Dynamics AX Integration samples and demos, which may reside on your VM or can be downloaded from https://github.com/Microsoft/Dynamics-AX-Integration as Dynamics-AX-Integration-master.zip	8a
Power BI Desktop, which is downloadable at https://www.microsoft.com/en-us/download/details.aspx?id=58494 as PBIDesktopSsetup_x64.exe	9

Course Timing

The course is expected to be completed in five days of training (i.e. 9AM to 5PM). This includes instructor demonstrations, presenting all slides, engaging in discussions, and performing the labs.

Here is a suggested schedule:

Timing	Course topic	Labs	Approx. timing
Day 1 a.m.	**Overview & Architecture** • Describe the Dynamics 365 ecosystem and major components of the Dynamics 365 Finance and Operations (FO) software • Describe the architecture of D365FO • Describe relevant D365FO design and deployment considerations	Development Environment configuration and Project/Model Creation	2:00
Day 1 p.m.	**Developer Tools** • Manage system implementations by using Lifecycle Services • Customize D365FO by using Visual Studio • Manage source code and artifacts by using version control • Work with other development tools to complete tasks	Source Control using DevOps	Start before lunch 3:00

Day 1 p.m. (content) to Day 2 a.m. (lab)	**Solution Design** • Determine the required application stack components and server architecture • Implement Application Lifecycle Management (ALM) - perhaps duplicate • Design a solution for D365FO – detailed; include programming approach	**Solution Design:** Data Structure Development	4:00
Day 2 p.m.	**AOT Elements** • Create and extend tables • Create Extended data Types (EDT) and enumerations • (Create classes and) extend AOT elements • Create forms and other UI	**AOT Elements:** Metadata Extension & Development	**4:00**
Day 3 a.m.	**Code Dev & Testing** • Code augmenting: • Develop object-oriented code • Develop X++ code • (eventing, delegates, etc.) • Extend D365 FO functionality • Describe test framework and tools – can do demo for • Perform Unit Testing	**Code Dev & Testing:** Code Extension & Development	**Slips into pm: 4:30**
Day 3 p.m.	**Data Migration** • Describe migration tools and methodologies • Plan Migration strategy • Prepare data for migration and migrate data	Data Export/Import using Data Entity Recurring Data Transfer	**2:45**
Day 4 a.m.	**Frameworks** • Implement D365 FO functionality	**Frameworks: SysExtension Framework**	**2:15**
Day 4 p.m.	**Integration** • Identify Data integration patterns and scenarios • Implement Data integration concepts and solutions • (Implement Recurring integrations – see lab previous day) • Integrate D365FO with Microsoft Azure • Troubleshoot integration errors • Implement the Data Management Package API • (Synchronous integrations, demos, PowerApps demos)	OData Integration Logic App &/or Flow Integration Calling External Web Service	Start in a.m.: 1:30 Labs 2:00 Demos 1:30 Lesson ~1:30

Day 5 a.m.	**Reporting** • Describe the capabilities and limitations of reporting tools in D365FO • Design, create, and revise Dynamics Reports • Design, create, and revise Dynamics workspaces • Design, create, and revise data sources that connect to data stores external to D365FO • Demo: BI reporting (aggregate measurements, etc.) • Demo: PowerBI	Power BI reporting from F&O	3:15
Day 5 p.m.	**Security & Performance** • Security • Describe and implement performance tools and LCS Environment Monitoring tools • Implement role-based security policies and requirements • Apply fundamental performance optimization techniques • Optimize performance for batch processes • Optimize user interface performance • Enhance Integration performance • Optimize Report Performance	Async & Sandbox Functionality	0:30