u2u

COURSE AGENDA | **DECEMBER 2021 - JUNE 2022**

TRAINING

ON-SCHEDULE IN BRUSSELS | ON-DEMAND IN EUROPE & MIDDLE EAST | ONLINE EVERYWHERE

.NET 6

POWER PLATFORM

INFRASTRUCTURE

Data

AZURE

MICROSOFT 365

DEVELOPMENT

JAVASCRIPT

u2u

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DEVELOPER AND IT TRAINING

IN-CLASS TRAINING

Instructor-led courses organized in our spacious
training center in Brussels. Learn in small groups
with a highly qualified and experienced trainer.

HIGH-QUALITY COURSES

We develop our own courses, keep them up to date
with the latest features, and provide you
with a printed copy. Enjoy a mix of theory, live
demonstrations and exercises.

LEARNING PORTAL

Benefit from our lab and learning environment during
and after your training.

TUNE IN REMOTELY

Participate remotely in our classroom-based courses. Follow the presentation and trainers' activity in the classroom through our video conferencing system and Microsoft Teams.

HEALTH & SAFETY

In order to provide a safe and relaxing atmosphere, we have drastically decreased the capacity of every classroom and are respecting a minimum distance of 2,5 meters between seats. More info at www.u2u.be/safety.

OUR TRAINERS

All trainers are experienced fulltime presenters who will make the most challenging topics easy to understand!

U2U has more than 20 years of experience in providing top quality courses by trainers who are experts in their respective fields. U2U courses provide developers, IT professionals, data specialists and business users the skills to get the most out of web, mobile, cloud, infrastructure and data technologies.

Our open enrolment courses are organized regularly **in our training center in Brussels**. These courses are conducted in **English** by our highly skilled and experienced instructors.

To facilitate online training, all our classrooms are properly equipped with hardware for remote learning to accommodate for both in-person and online participants. This setup supports regular and substantive interaction between the trainer and the participants as if they were physically in the classroom.

DELIVERY FORMATS

Classroom
- Classroom-based instructor-led courses.
- Organized in our spacious training center in Brussels.
- Face-to-face interaction with highly qualified and experienced instructors.
- Course manual, preconfigured laptop, lunch, coffee and beverages are included.

Remote Classroom
- Participate remotely in our classroom-based courses.
- Follow the presentation and trainer's activities through the camera system from anywhere in the world.
- Interact with our trainer, similar to a physical classroom.
- Participate in exercises with a ready-to-use lab and learning environment.

AVAILABLE DISCOUNTS

10% discount, if you bring your own laptop to the classroom-based course.
15% discount for 14-Day Advance Prepayment. Your registration will be final and cannot be refunded or cancelled.
15% discount for the second participant. **25% discount** from the third participant onwards of the same company attending the same course session.

HOW TO OBTAIN A 50% DISCOUNT?

Book multiple participants for the same course session and select the available discount. The first participant can receive up to 25% discount, the second up to 40% and from the third participant on up to 50%. Your group's price for a 5-day classroom-based course will be:

First participant:	1900€ - 25% =	1425€
Second participant:	1900€ - 40% =	1140€
Third participant:	1900€ **- 50%** =	950€
Total for 3 participants:		3515€ (instead of 5700€)

Private company courses can provide a more economic and convenient solution for companies that want to train a **group of people**. Our private formula offers exclusive courses in **Dutch, English or French customized to meet the needs of your company**.

What you want

The content of the courses can be **fully tailored to meet your needs**. To optimize your time and to make the most of the course, you can choose the duration and which topics, based on our current catalog, you want to integrate in the course.

Where you want

The courses can be organized **in our training center, online or at a location of your choice** throughout Europe and the Middle East. We will bring the course material and the ready-to-use lab environment.

PRICES

Our group price starts at 4000€ for 3-day in-company training up to 10 participants.

What is included in our price?
- The price includes the organization of the training online or on-site in your classrooms.
- The number of participants is not limited.
- All courseware up to 10 participants is included.
- The course content can be adapted to your needs without extra cost.
- Above 10 participants, additional fee per extra participant.

Please contact us for an exact price calculation and more information about our terms and conditions.

DIENSTVERLENER VOOR DE
KMO-PORTEFEUILLE

Dankzij de subsidiemaatregel van de Vlaamse overheid, de Kmo-portefeuille, kan u voor uw opleiding tot 30% subsidies ontvangen. Het registratienummer van U2U voor de pijler opleiding is **DV.O213569**.

VISUAL STUDIO

.NET PROGRAMMING

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UCSPR	Object-Oriented Programming in C#	1900€	5		31			11	30	
UNOOP	Advanced Object-Oriented Programming Techniques in .NET	1900€	5	13		14		25		20

WEB DEVELOPMENT

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UNASP	Building Web Applications with ASP.NET	1900€	5			7	21		30	
UWEBA	Advanced .NET 6 Web Development	1900€	5	6		14		25		27
UWAPI	Building ASP.NET Web APIs	1300€	3	8		21		19		13
UWSEC	Web Security Development Techniques	1300€	3	20		21		19		7
UBLZ	Building Single Page Applications with Blazor and C# NEW	1300€	3		19		14		9	

WINDOWS & MOBILE DEVELOPMENT

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UWPF	Building Windows Applications with WPF	1900€	5			14			16	
UMAUI	Building Mobile Apps with Xamarin.Forms NEW	1900€	5		31			4		20

ENTERPRISE & ARCHITECTURE

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UARCH	.NET Best Practices: Architecture & Design Patterns	1900€	5		24		28		30	
UDEF	Domain-Driven Design with Entity Framework Core	1300€	3	20		28		19		7
UTEST	Effective Unit Testing	900€	2	16			3		5	

TECHNOLOGY OVERVIEW

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UMST	Microsoft Windows & Web Development - Technology Overview	850€	2	6			10		12	

MICROSOFT AZURE

AZURE FOR DEVELOPERS

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UAWEB	Developing & Deploying Web Apps on Microsoft Azure	1900€	5	13		7	28		16	
UAMIC	Developing Microservices with Containers, Kubernetes and Microsoft Azure	1300€	3	20		23			9	
UACA	Microsoft Azure Architecture Master Class NEW	1600€	4			14		25		7
UADAI	Developing Intelligent Solutions with the Microsoft AI Platform	1300€	3		17				2	

MICROSOFT AZURE DEVOPS

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UTFS	Team Development with Azure DevOps	1300€	3		17		21		23	

MICROSOFT AZURE FOR ADMINISTRATORS

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UAZUREA	Microsoft Azure Infrastructure Services	1900€	5		24		14		9	27
AZ-303	Microsoft Azure Architect Technologies	1900€	5		31					13
AZ-700	Designing and Implementing Microsoft Azure Networking Solutions NEW	1300€	3		25		15		10	28
UAAD	Azure Active Directory Identity Management	900€	2	2	31			11		13
UACON	Managing Containers with Kubernetes and Microsoft Azure	1300€	3	20		28				20
UAIC	GitOps: Infrastructure as Code with Microsoft Azure NEW	1300€	3			28		19		20
UASEC	Log Analytics and Security with Microsoft Azure NEW	900€	2			17			30	

MICROSOFT AZURE DATA PLATFORM

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UASQL	Administering Azure SQL Databases NEW	1600€	4		24		14		16	
UASQLD	Developing Azure SQL Databases	1900€	5	6	24			11		13
UADE	Data Engineering on Microsoft Azure	1900€	5	13		14		11		13
UACIT	Machine Learning for the Citizen Data Scientist	900€	2			7		21		27
UADS	Data Science with Python on the Microsoft Azure Platform	900€	2			9		20		29

MICROSOFT AZURE FOR PROJECT MANAGERS

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UAT	Microsoft Azure - Technology Overview NEW	900€	2			21			12	

JAVASCRIPT

WEB FUNDAMENTALS

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UJSDEV	JavaScript Fundamentals	1300€	3	1	26			6		1
UJSWEB	Programming with JavaScript, HTML and CSS	1900€	5		24			4	30	

JAVASCRIPT LIBRARIES

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UANG	Building web apps with Angular and TypeScript	1300€	3		31		21		23	
UANGA	Mastering Angular	1300€	3			7		11		7
UREACT	Developing web apps with React	1300€	3		31		28		16	
UVUE	Building Web Apps with Vue.js NEW	900€	2	20			3		5	

MOBILE DEVELOPMENT

Code	Course	Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
UREACTN	Mobile Development with React Native	900€	2		20	9	31		19	

POWER BI

		Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
POWER BI FUNDAMENTALS										
UBIPBE	Analyzing your data with Power BI for Business Users	1300€	3		24	7		25		7
UBIPB	Analyzing your data with Power BI for BI Professionals	1900€	5		31		28		30	
ADVANCED POWER BI										
UDAX	Mastering DAX	1300€	3	20		14		4		7
UPBIM	Managing a Power BI Environment NEW	1300€	3	13		21		25		20
POWER BI FOR DEVELOPERS										
UBIPBD	Developing for the Power BI Platform	1300€	3	20		28			9	

POWER PLATFORM & DYNAMICS 365

		Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
FOR POWER USERS										
UPOWER	Microsoft Power Apps and Power Automate	1600€	4	13		21		19		7
UCDS	Building Model-Driven Apps with Microsoft Dataverse	1900€	5		17		7		16	
UPAP	Building Power Apps Portals	900€	2			17		28		30
UCRM365P	Customizing Microsoft Dynamics 365	1900€	5		17		7		16	
FOR DEVELOPERS										
UCDSD	Developing for the Power Platform with Microsoft Dataverse NEW	1900€	5			21			9	
UCRM365D	Developing Microsoft Dynamics 365 Solutions	1900€	5			21			9	

MICROSOFT 365 & SHAREPOINT

		Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
MICROSOFT 365 FOR POWER USERS										
UO365P	Office 365 Essentials	1300€	3		24			4	23	
USPOP	Microsoft SharePoint Online for Power Users	1900€	5	6	31		14		2	13
UVIVA	Microsoft 365 Employee Experience with Microsoft Viva NEW	1300€	3		24		28		16	
MICROSOFT 365 FOR DEVELOPERS										
USPOAP	Modern Development with Office 365 and SharePoint Online	1900€	5	13		28		25		20
USPFX	Developing with the SharePoint Framework	1900€	5	6		14			9	
UTEAMSD	Developing for Microsoft Teams	1300€	3			7		11		27
MICROSOFT 365 FOR IT PROFESSIONALS										
UO365A	Configuring and Administering Office 365	1600€	4		17		21		2	13
MS-700	Managing Microsoft Teams	1300€	3			21			2	
UINT	Microsoft Endpoint Manager: Configuring Devices with Microsoft Intune	1300€	3	13		14	28		23	
UMSEC	Microsoft 365 Cloud Security NEW	1300€	3			2		13		15
SHAREPOINT FOR TECHNICAL MANAGEMENT										
USPOT	Microsoft SharePoint Online Technology Overview	850€	2	2		10		21		9
SHAREPOINT SERVER 2019										
USP19P	SharePoint Server 2019 for Power Users	1600€	4				7		16	

SQL SERVER

		Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
MICROSOFT SQL SERVER										
UTSQL	Querying SQL Server with Transact-SQL	1300€	3	20		23		4	23	
USQLD	Developing and optimizing SQL Server databases	1900€	5	6	24			11		13
USQLA	Administering Microsoft SQL Server Databases	1900€	5		17		21		30	
USQLOP	SQL Server Performance Tuning and Optimization	1900€	5		31				2	27
AZURE SQL										
UTSQL	Querying SQL Server with Transact-SQL	1300€	3	20		23		4	23	
UASQLD	Developing Azure SQL Databases	1900€	5	6	24			11		13
UASQL	Administering Azure SQL Databases NEW	1600€	4		24		14		16	
USQLOP	SQL Server Performance Tuning and Optimization	1900€	5		31				2	27
BUSINESS INTELLIGENCE FOR BI PROFESSIONALS										
USQLIS	Implementing Data Warehouses with Integration Services	1900€	5		31		28		30	

WINDOWS SERVER & POWERSHELL

		Price	Days	Dec	Jan	Feb	Mar	Apr	May	Jun
WINDOWS SERVER 2019										
WS-011	Windows Server 2019 Administration	1900€	5	6		21		25		
POWERSHELL										
UPSHELLA	Mastering PowerShell	1900€	5			7	21		16	
UPSHELL	Scripting with PowerShell	1300€	3			7	21		16	

All courses scheduled at U2U Brussels are taught in English. Course hours: First day of course 9:30-17:00, next days: 9:15-17:00.

OBJECT-ORIENTED PROGRAMMING IN C#

LEARNING GOALS

This course teaches you how to start programming with Visual Studio, C# and .NET. You will get familiar with the C# language syntax and the .NET Object-Oriented concepts, such as classes, objects, inheritance, polymorphism... In this course, you'll get a taste of the different types of applications and .NET libraries through examples in WPF, Entity Framework and ASP.NET.

TARGET AUDIENCE

This training targets developers with no or limited C# experience. A basic understanding of programming - in whatever language - is advised. Once you've finished this training, you can start your journey to learn building things like web applications, desktop or mobile apps, backends, games, IoT, bots, etc. All with C#.

OVERVIEW OF .NET 6

What is a .NET Application? .NET Framework versus .NET 6. .NET Applications: ASP.NET, Web API, WPF, Blazor, Xamarin,...

THE .NET APPLICATION

The Visual Studio solution and project. What are Namespaces and Libraries?

CLASSES AND OBJECTS

What is a class? Fields, Methods and Properties. Namespaces.

INSTANCE CONSTRUCTORS

Instance Constructors. Constructor Initializers. Overloading Constructors.

TYPES IN .NET

Type categories in .NET. Value types, Reference types and Immutable Reference types. Custom Value types: Structure and Enumeration. Boxing and Unboxing. Arguments of Functions. Pass by Value, by Reference; Passing Output.

STATIC MEMBERS AND STATIC CLASSES

Static Members. Static Constructors. Static Classes.

INHERITANCE

General Principle of Inheritance. Accessibility levels: public, private, protected and internal.

POLYMORPHISM

Inheritance & polymorphism. Overriding methods & properties. Using the base class. Sealed classes, methods and properties. The Object class. Overriding the ToString, Equals and GetHashCode method.

ABSTRACT CLASSES AND INTERFACES

Abstract classes. Defining interfaces. Implementing interfaces. Interface examples in .NET.

COLLECTIONS

Arrays in .NET, Multidimensional Arrays. Indexer properties. The for, foreach and while loops.

GENERICS

How to use Generics. Creating your own Generics. Generic constraints.

EXCEPTION HANDLING

The exception-mechanism in .NET. The try-catch-finally keywords. Creating custom Exceptions.

DELEGATES AND EVENTS

Creating Delegates. Using Delegates. Multicast Delegates. Creating Events. Using Events in a UI.

LANGUAGE FEATURES

Type Inference. Extension Methods. Anonymous Methods. Anonymous Types. Lambda Expressions.

ACCESSING A DATABASE WITH LINQ AND ENTITY FRAMEWORK

Enumerable Class. Func Delegates. Entity Framework. Query Operations from, where, order, group and select. Introducing Entity Framework. Entity Framework Basics.

ADVANCED OBJECT-ORIENTED PROGRAMMING TECHNIQUES IN .NET

LEARNING GOALS

Today's applications have to be more responsive, scalable and high-performing. Therefore, modern .NET developers have to be familiar with the more advanced features of .NET and know how things work under the hood. This course examines advanced concepts of the framework like async programming, parallel computing and Reactive Extensions. You'll explore the latest C# language features like Nullable Reference Types and Asynchronous Streams. Join the training and improve your existing .NET programming skills.

TARGET AUDIENCE

This in-depth course is meant for experienced developers who have an understanding of the .NET platform and have built .NET applications using either C# or VB.NET.

GENERICS

Generic Class Declarations and Generic Struct Declarations. Generic interface declarations. Understanding Covariance and Contravariance.

DELEGATES AND EVENTS

Creating Delegates. Using Delegates. Multicast Delegates. Creating Events. Using Events in a UI. Closures.

LINQ SYNTAX FUNDAMENTALS

What is LINQ? LINQ to Objects, SQL, Entity Framework and XML. LINQ's Enumerable Class. Func Delegate. Query Syntax vs. Method Syntax. Deferred Query Evaluation. Querying Data using LINQ. Group and Join Operators. Don't Forget the Let Operator!

USING TUPLES

Introducing Tuples. Writing Symmetric Functions. Understanding Destructuring. Discards. Pattern matching with tuples. ValueTuple.

GARBAGE COLLECTION

The Lifecycle of a Class Instance. GC Class and Members. Forcing a Garbage Collection. Garbage Collection for Unmanaged Resources. The Dispose Pattern. Ressurection. Weak References.

REFERENCE SYMANTICS WITH VALUE TYPES

Understanding Reference Semantics. How Value Types allow you to write faster code. Passing value types by reference with new access modifiers. Understanding Span<T> and related classes. Measuring using BenchmarkDotNet.

CONCURRENCY

Understanding processes and threads. Different kinds of Concurrency. Scheduling Threads.

MULTITHREADING IN .NET

The Thread. Exceptions and threads. Understanding thread pooling. Debugging Multi-Threaded Code.

THREAD SYNCHRONIZATION

Race conditions and dead locks. Avoiding race conditions. Synchronizing threads: locks, monitors, signals, ... Thread safety in .NET.

TASKS

What are Task? Waiting asynchronously. Dealing with Exceptions. Task cancellation.

THE ASYNC AND AWAIT SYNTAX EXPLAINED

What is asynchronous programming? Invoking any method, synchronous and asynchronous. Async Exception Handling.

ASYNCHRONOUS PROGRAMMING IN .NET

A History of Asynchronous Programming in .NET. Understanding SynchronizationContext. Cancellation, Progress and Exception Handling. ConfigureAwait. Async Guidelines.

PARALLEL COMPUTING

What is parallel programming? Concurrent collections. Parallel LINQ.

REACTIVE EXTENSIONS

Push vs. Pull. Understanding IObservable<T> and IObserver<T>. Hot and Cold Observables. Using LINQ with Rx. Building your own Rx Extensions.

ATTRIBUTES AND REFLECTION

What are Attributes? Applying Attributes. Common Predefined Attributes. Building Custom Attributes. What is Reflection? Retrieving Attribute Values.

EXPRESSIONS AND STATIC REFLECTION

What are Expressions? How does LINQ to Database work? Using Static Reflection. Dynamically Generating Code with Static Reflection.

USING THE DYNAMIC LANGUAGE RUNTIME

Understanding the Dynamic Keyword. Talking to JavaScript Objects using the Dynamic Keyword. Building your own Dynamic Types.

BUILDING WEB APPLICATIONS WITH ASP.NET

05 DAYS

UNASP

29 Nov - 03 Dec 2021
07 - 11 Feb 2022
21 - 25 Mar 2022
30 May - 03 Jun 2022
08 - 12 Aug 2022

LEARNING GOALS

This course will teach you how to build Web applications using the ASP.NET MVC (model-view-controller) framework and patterns in .NET 5 (also known as .NET Core). You will also learn how to create and consume RESTful services with ASP.NET Web API, JavaScript and Vue JS.

TARGET AUDIENCE

Students should have a good knowledge of one of the .NET programming languages C# (or VB.NET). Furthermore, a basic knowledge of HTML is advised. This course is intended for .NET 5 with C#.

THE HTTP PROTOCOL
Http Methods. Headers. Status Codes. Redirection. Caching.

ASP.NET MVC: INTRODUCTION
The Model-View-Controller (MVC) pattern. MVC in ASP.NET. Client-centric versus Server-centric.

THE 3 MAIN ASP.NET MVC COMPONENTS
Handling the user interaction with Controller. Rendering the response with MVC views. Creating a MVC Model and ViewModel. understanding Routing.

VIEWMODELS
Passing Data to a View. ViewModels. Mapping.

JAVASCRIPT LANGUAGE FUNDAMENTALS
Variables. Primitives and Objects. Functions and the Self-Invoking Function Pattern. Scope. Strict Mode. Error Handling.

RESPONSIVE WEB DESIGN WITH BOOTSTRAP
Normalizing and Resetting. The Grid System. Utility classes.

ASP.NET CORE PIPELINE
Understanding the principle of the ASP.NET Core Pipeline. Selecting your middleware in the Startup class. Understanding the need for dependency injection and how to configure your dependencies. Adding your first middleware for serving static files. ASP.NET Core has its own routing middleware. Showing proper diagnostics while developing, and how to configure it in production. Review of built-in middleware.

END-POINT ROUTING
Getting Started with Routing Concepts. Defining Routing Templates. Route Parameter Contraints. Route Parameter Transformers. Understanding Route Matching. Using Concentional vs. Attribute Routing. Routing Attributes. Handling Routing Errors.

ASP.NET MVC CONTROLLERS
Model Binding. Different Action Results. Working with GET and POST. Action Filters. Redirections.

RAZOR VIEWS
Views and View Engines. Layout and Sections. HTML and Tag Helpers.

REUSABLE RAZOR BUILDING BLOCKS
Partial Views. View Components. Display and Editor Templates.

DATA VALIDATION
Explicit versus Implicit Validation. Validating data using Data Annotations. Self-Validating Models. Validating using the Model Binder. Client-side validation with Unobtrusive JavaScript.

ASP.NET MVC DEPENDENCY INJECTION & TESTING
Methods of Dependency Injection. Dependency Inversion, Explicit Dependencies and Inversion of Control. Unit Testing your Components. Stubbing, Mocking & Faking.

PUBLISHING YOUR APPLICATION
Deployment Options. Cross-platform Deployment. Self-Contained Deployment. Optimize your deployment with Assembly Trimming.

BUILDING RESTFUL SERVICES WITH WEB API
What is REST? Building a REST Web-API with ASP.NET Web API. Supporting multiple representations: XML and JSON.

CLIENT-SIDE SERVICE CONSUMPTION WITH VUE JS
The Evolution of Web Development. Components Everywhere. Vue Essentials. Using the Fetch API to consume a REST Service.

AUTHENTICATION
Knock Knock... Who's There? Windows Integrated. Username and Password. Using External Authentication such as Google or Facebook. Extending Authentication with your own Data. Tokens. Impersonation and Delegation.
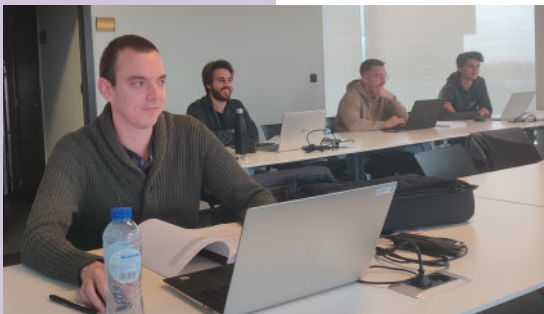
ADVANCED .NET 6 WEB DEVELOPMENT

LEARNING GOALS
So you've been using ASP.NET Core MVC for a while, and you want to learn more? Join us in this training to upgrade your skills to master .NET 6 and ASP.NET Core. In this advanced ASP.NET development course you will build up the necessary knowledge and tools for dealing with the complexity of modern web applications using .NET 6, Entity Framework Core, apply Clean Architecture, and get more insights into SignalR, gRPCBlazor, Azure, OpenID Connect and Internationalization. This training uses Visual Studio, but if you like you can use your preferred development environment.

TARGET AUDIENCE
This course is meant for developers that have experience with ASP.NET Core MVC and/or Web API and want to become a master in ASP.NET Core.

.NET 6 INTRODUCTION
Understanding .NET 6: .NET Framework versus .NET 6. Supporting multiple runtimes. What is .NET Standard?.

VISUAL STUDIO FOR ASP.NET CORE.
Visual Studio 2022. Developing with the new Hot Reload. NuGet. Creating your own NuGet packages. Dotnet CLI. Global.json.

MODERN C# LANGUAGE FEATURES YOU NEED TO KNOW
Nullable Reference Types. Implicit Usings and File Scoped Namespaces. Value Tuples. C# Pattern Matching. Init-only Properties and Records. Target Typed Expressions. Top-level Programs.

ASP.NET CORE PIPELINE
Understanding the principle of Pipelines. Selecting your middleware in the Startup class. Review of built-in middleware.

ASP.NET CORE CONFIGURATION
No more web.config. Getting configuration to your code. Storing sensitive configuration in Secrets. Using the Options pattern. Adding your own configuration provider

LOGGING
Different logging providers. Logging scopes. Using the HTTP Logging Middleware. Using NLog with .NET Core 6. Logging guidelines.

BUILDING CUSTOM MIDDLEWARE FOR ASP.NET CORE 6
What is the OWIN specification? Building your own custom middleware. Testing your middleware.

ASP.NET CORE MVC IN .NET 6
Using CSS Isolation for MVC Views. Building Custom TagHelpers. Understanding and Creating View Components. Supporting OpenAPI. Using Worker Services to execute jobs in the background.

ASP.NET CORE WITH .NET 6
Minimal API. Dependency Injection. Defining routes and handlers. Model Binding. Creating Custom Model Bindings. Working with Validation. Integration with Angular and React.

WORKING WITH JSON
The new JsonSerializer. Using the new convenience extension methods. Using IHttpClientFactory to maximize re-use.

.NET 6 CROSS-PLATFORM CAPABILITIES
Developing ASP.NET Core on any platform. Generating a .NET 6 project using dotnet CLI. Getting started with Visual Studio Code.

PUBLISHING YOUR APPLICATION
Cross-platform Deployment. Self-Contained Deployment. Assembly Trimming. Deploying to Containers.

ENTITY FRAMEWORK CORE
Scaffolding your project from an existing database. Understanding the generated code. Interacting with the database with LINQ.

MODELING YOUR DATABASE WITH EF CORE
Creating and applying migrations. Table and column mapping. Modeling properties. Mapping Value generated properties. Concurrent updates. Modeling relationships. Mapping inheritance.

SIGNALR
Server Concepts. Building SignalR Clients with C# and JavaScript.

EFFICIENT COMMUNICATION WITH GRPC
What is gRPC?. Defining your contracts. Implementing your contracts on the server. Generating a Proxy and using it on the client.

BUILDING SPA WITH C# AND BLAZOR
Introducing Blazor and Web Assembly. Client-Side vs. Server-Side Blazor. Creating a simple Blazor Component. Hosting Blazor.

AZURE APP SERVICES: WEB APPS
Deploying from Visual Studio. Plans. Scaling options. Configuring app settings, TLS, domain names and backup scheduling. Monitoring.

SOURCE CONTROL WITH GITHUB
Version Control concepts. Distributed Source Control with Git and GitHub. Creating a local repository. Cloning a remote repository. Staging files. Committing files. Adding branches to your workflow. Branching Strategies. Merge vs. Rebase. Synchronizing with a remote repository. Pull Requests.

CONTINUOUS INTEGRATION WITH GITHUB ACTIONS
What is GitHub Actions? Doing Continuous integration. What are jobs and steps? Using variables. Defining and using secrets. Integrating with Azure using Publish Profiles or Service Principals.

UNDERSTANDING CLAIMS-BASED SECURITY
Representing the user. Introducing claims based security. Understanding tokens and their representation on the net. Using Claims in .NET.

MODERN WEB AUTHENTICATION AND AUTHORIZATION
The Internet and a way of sharing. Introducing OAuth and OpenID Connect. OAuth fundamentals: Authorization Code Grant, Implicit Grant and Client Credential Grant. Implementing OpenID Connect web sign-in with AzureAD and Identity Server.

PROTECTING A WEB-API WITH OAUTH
Protecting a Web API's resources. Adding permissions to the server side. Requesting permissions at the client side. Using the Microsoft Authentication Library (MSAL). User consent.

ARCHITECTING MODERN WEB APPLICATIONS
"Clean" Architecture: put the business and application model at the center. Understanding the Core, Infrastructure and Presentation layers. Testing everything with Clean Architecture.

INTERNATIONALIZATION
Display Content in Different Cultures. Using resource files. Different Views. Validation Messages. Autodetect Cultures. Override Cultures. Client-side Localization.

WEB SECURITY DEVELOPMENT TECHNIQUES

LEARNING GOALS
Many web developers lack the required skills to write secure code. This course takes you through the different security threats and learns you hands-on how to apply them to ASP.NET Core and ASP.NET Web API.

TARGET AUDIENCE
This course is meant for developers that have experience with ASP.NET and want to make the world a safer place through applied security best practices.

SECURITY: A MANY PRONGED WORD
Non-disclosure. Authentication. Authorization. Data-tampering. Security testing. Applying STRIDE. The Ten Immutable Laws of Security.

PRIVACY
Encryption. Understanding symmetric keys. Asymmetric keys. Hybrid encryption. Hashing. Properly store passwords with hashing and salt. What are digital signatures? Certificates, SSL, TLS and HTTPS.

OWASP WEB SECURITY HEADERS
Understanding HTTP headers. Setting headers in IIS and ASP.NET Core. HTTP Strict Transport Security header. HSTS options. HTTP Public Key Pinning. Understanding TOFU and how to mitigate.

UNDERSTANDING CLAIMS-BASED SECURITY
Representing the user. Introducing claims based security. Understanding tokens and their representation on the net. Using Claims in .NET.

MODERN WEB AUTHENTICATION AND AUTHORIZATION
The Internet and a way of sharing. Introducing OAuth and OpenID Connect. OAuth fundamentals: Authorization Code Grant, Implicit Grant and Client Credential Grant. Implementing OpenID Connect web sign-in with AzureAD and Identity Server.

PROTECTING A WEB-API WITH OAUTH2
Protecting a Web API's resources. Adding permissions to the server side. Requesting permissions at the client side. Using the Microsoft Authentication Library (MSAL). User consent.

WEB SITE SECURITY THREATS AND DEFENCES
OWASP - Top 10 security issues. Broken Access Control. Cryptographic Failures. Injection. Insecure Design. Security Misconfiguration. Vulnerable and Outdated Components. Indentification and Authentication Failures. Software and Data Integrity Failures. Security Logging and Monitoring Failures. Server-Side Request Forgery. Extra: Denial of Service.

SECURITY BEST PRACTICES
Never trust input. Always properly encode output. Apply good access control. Run with least privilege. Securely store (or better yet - not) secrets. Don't tell the hacker anything. Allow long password/passphrases. Default to secure configuration. Generate good random numbers.

03 DAYS

UWAPI

08 - 10 December 2021
21 - 23 February 2022
19 - 21 April 2022
13 - 15 June 2022
22 - 24 August 2022

LEARNING GOALS
ASP.NET Web API makes it easy to build REST APIs that reach a broad range of clients, including web and mobile applications. Along with best practices and modern design techniques, this extended 3-day training will guide you towards understanding API architecture, security considerations, and how to build a REST API with ASP.NET that is both extensible and flexible.

TARGET AUDIENCE
Participants of this course need to have a solid understanding of the .NET platform and building NET applications using either C#

REST
The HTTP Protocol in Depth. How REST works.

INTRODUCING ASP.NET WEB API
Architecture. CRUD operations. Content Negotiation. Consuming with a .NET Client or fetch API.

END-POINT ROUTING
Getting Started with Routing Concepts. Defining Routing Templates. Route Parameter Contraints. Route Parameter Transformers. Understanding Route Matching. Using Conventional vs. Attribute Routing. Routing Attributes. Handling Routing Errors.

ASP.NET CORE API CONTROLLERS
The ApiController Attribute and ControllerBase Class. Action Methods. Understanding IActionResult. Using the ProblemDetails class for error reporting.

CONTENT NEGOTIATION
Media types. Built-in Content Negotiation. Media Formatters. Custom Media Formatters.

MODEL VALIDATION
Model Binding. The Modelstate. Validation Attributes. Returning Validation Errors. Avoiding Overposting with ViewModels.

SECURING YOUR WEB API
Authentication & Authorization in Web API. Authorization Attributes and Policies. Authentication with OAuth and OpenID Connect. Working with Roles and Scopes.

DOCUMENTING YOUR REST SERVICE WITH THE OPENAPI SPECIFICATION
Swagger and Swashbuckle. Enriching your metadata with attributes. Enriching your metadata with comments. Adding XML-comments. Generating client-side code with Visual Studio and Swagger Codegen.

BEST PRACTICES WHEN DESIGNING A WEB API
How to Organize Resources. Idempotency and Safeness. Dealing with Batches. Remote Procedure Calls. Limiting Data. Versioning. Handling Exceptions. Caching. Handling Large Resources.

WEB API PATTERNS
Asynchronous Request-Reply Pattern. WebHooks. HATEOAS.

03 DAYS

BUILDING SINGLE PAGE APPLICATIONS WITH C# AND BLAZOR

UBLZ

19 - 21 January 2022
14 - 16 March 2022
09 - 11 May 2022
04 - 06 July 2022
19 -21 September 2022

LEARNING GOALS
Blazor is a new Microsoft Framework for building Single Page Applications. Unlike frameworks like Angular, VueJS, and React, Blazor allows you to do this using C# and use all the skills and tools you have been using with .NET 6! Attend this training if you want to get a headstart with Blazor!

TARGET AUDIENCE
This training requires basic knowledge about building websites with HTML and CSS, and also some knowledge about C# and ASP.NET.

INTRODUCTION TO WEBASSEMBLY AND BLAZOR
Building Rich Web Experiences, Past, Present and Future. Introducing Web Assembly. Web Assembly and .NET 6. Getting Started with Blazor - Easy! Understanding the difference between Blazor WASM vs. Blazor Server. Blazor Features Overview. Generating your project with Visual Studio, dotnet CLI or Visual Studio Code. Examining the generated solution and its projects.

BLAZOR DATA BINDING
A Quick Look at Razor. One Way Data Binding. Event Handling and Data Binding. Two Way Data Binding. Reporting Changes with StateHasChanged.

BLAZOR FORMS AND VALIDATION
Working with Forms in Blazor. Adding validation to your forms. Disabling the "Submit" button when validation detects errors. Implementing custom validation in Blazor.

BLAZOR COMPONENTS
What is a Blazor Component? Building a Simple Blazor Component. Component Parameters. Conditional Rendering and ChildContent. Separating the View and View-Model. Component Data Binding. Attribute Splatting. Understanding EventCallback. Referring to Components. Styling Components.

UNDERSTANDING BLAZOR COMPONENT LIFECYCLE HOOKS
Understanding Lifecycle Hooks. Limiting unnecessary Rerendering of components with ShouldRender. Using Virtualization to limit rendering. Help Blazor with change detection using @key.

REUSING COMPONENTS WITH COMPONENT LIBRARIES
Building a Component Library. Consuming a Component Library.

SERVICES AND DEPENDENCY INJECTION
Understanding Dependency Inversion & Injection. Some Inversion of Control Containers. Constructor & Property Injection. Configuring Dependency Injection. Blazor and Dependency Injection. Building Blazor Services.

DATA STORAGE AND MICROSERVICES
What is REST? Invoking Server Functionality with REST. Building a Simple Microservice with ASP.NET Core. What is Entity Framework 5? Generating the Database with Code First. Testing your Microservice using Postman.

COMMUNICATION WITH MICROSERVICES
Sending and receiving data. Using the HttpClient Class. The HttpClientJSONExtensions Methods. Taking full control with HttpRequestMessage. Retrieving Data From the Server. Storing Changes.

SINGLE PAGE APPLICATIONS AND ROUTING
What is a Single Page Application? Using Layout Components. Understanding Routing. Setting the Route Template. Redirecting to Other Pages. Sharing State between Components. Lazy Loading parts of your Blazor web site.

JAVASCRIPT INTEROPERABILITY
Why do we still need JavaScript in Blazor? Calling JavaScript from C#. Calling .NET Methods from JavaScript. Displaying a map with a JavaScript library.

BLAZOR AND GLOBALIZATION
What is internationalization, localization and globalization? Detecting the user' language. Internationalizing your Blazor application. Localizing your application.

SECURITY
Adding authentication to a Blazor Server application. Adding authentication to a Blazor WASM application.

.NET BEST PRACTICES: ARCHITECTURE & DESIGN PATTERNS

LEARNING GOALS
In this training we identify software design problems and see how to address these using the best suited Design Pattern. This course teaches you the art of building maintainable and testable code through unit testing. We will also look at modern C# language features, S.O.L.I.D. principles, and apply what we've learned. Modern day developers should also know about Reactive Programming which makes certain complex problems a breeze to implement. Finally we finish building a reusable library always keeping things like backward compatibility and developer ease-of-use in mind!

TARGET AUDIENCE
This course is intended for experienced programmers who are very familiar with VB.NET or C# and have a working experience with .NET.

SOLID PRINCIPLES
Single Responsibility. Open/Closed. Liskov Substitution. Interface Segregation. Dependency Inversion.

INTRODUCTION TO PATTERNS
What is a Pattern? The Gang of Four: Erich Gamma, Ralph Johnson, Richard Helm and John Vlissides. Different kinds of design patterns: creational, structural and behavioral patterns. The difference between implementation, design and architecture patterns... Some anti-patterns such as Loosy-Goosy.

CREATIONAL PATTERNS
Singleton - a.k.a. The Pluto Pattern. Builders - seperating the construction from the representation. Factory Method. Abstract Factory.

BEHAVIORAL PATTERNS
Template Method. Strategy. Chain of Responsibility. State. Iterator. Observer. Mediator.

MORE LOOSE COUPLING USING DEPENDENCY INJECTION
What is tight coupling and how to prevent it? Using Inversion of Control (IoC) containers. Constructor and Property injection. Microsoft.Extensions.DependencyInjection as an example.

STRUCTURAL PATTERNS
Adapter. Decorator. Composite Facade. Flyweight. Proxy

BUILDING YOUR OWN LITTLE PROGRAMMING LANGUAGE WITH SOME PATTERNS - FUN!
Interpreter: Build your own expressive language-grammar and execute it. How LINQ uses Interpreter - and how you can take advantage of it yourself. Builder: Hide how complex hierarchies of objects get built - and allow variations. XAML as the ultimate builder. Reflection: the ideal .NET way for implementing your own builder. Visitor: When you need a lot of different operations on the same object structure.

MODEL-VIEW-WHATEVER
Model-View-Controller: An ancient pattern back in fashion. ASP.NET MVC - an introduction. MVVM in WPF - MVC taking advantage of powerful databinding capabilities. Command: Encapsulate behavior in objects. Implementing commands using closures.

REACTIVE PROGRAMMING
What are Observables? Using Reactive Extensions. Applying the Redux pattern so simplify complex applications.

UNIT TESTING IN .NET
What every developer wants: Quality code that works; and keeps on working. Finding bugs: not just in code. - Or how NASA lost a 125.000.000$ Mars orbiter. What is unit testing? And what is a good unit test? Understanding the difference between a unit test and an integration test. Test Driven Development - Should you be doing it? Role-playing: Marge, Homer and Bart. The Triple-A of unit testing - and what has cooking to do with this?

UNIT TESTING WITH VISUAL STUDIO
MSUnit - Built into Visual Studio. Building and running Unit Tests with MSUnit. Using the Test Explorer Window.

DESIGN PATTERNS APPLIED: DEVELOPING YOUR OWN REUSABLE LIBRARY
Adding the GoF Command pattern to MVVM. Using interfaces for flexibility. Building Command Objects - extending WPF's ICommand interface. Adding Undo and Redo functionality to the command pattern. Using a CommandManager class. Challenge: retro-fitting our commands into MVVM without lots of changes. Implementing Undo-Redo using the Memento pattern. Choosing whether or not to add the Prototype pattern. Ideas on how to proceed with the command pattern.

DOMAIN DRIVEN DESIGN WITH ENTITY FRAMEWORK CORE

LEARNING GOALS
This course will discuss the concepts of domain-driven design and how EF Core can help you at implementing these concepts. Participants learn about modern architecture and will get a hands-on approach to building a web site using DDD and EF Core.

TARGET AUDIENCE
Attendees are required to have prior knowledge of C#/VB.NET and ASP.NET.

INTRODUCTION TO DOMAIN DRIVEN DESIGN
What is DDD? Advantages of using DDD. When is DDD a bad option? Anti-Pattern: Big Ball of Mud. Anti-Pattern: Death by a Thousand Dots.

ARCHITECTING MODERN WEB APPLICATIONS
"Clean" Architecture: put the business and application model at the center. Understanding the Core, Infrastructure and Presentation layer. Testing everything with Clean Architecture.

UNIT TESTING IN .NET AND .NET 6
What every developer wants: Quality code that works; and keeps on working. Finding bugs: not just in code. - Or how NASA lost a 125.000.000$ Mars orbiter. What is unit testing? And what is a good unit test? Understanding the difference between a unit test and an integration test. Test Driven Development - Should you be doing it? Role-playing: Marge, Homer and Bart. The Triple-A of unit testing - and what has cooking to do with this?

UNIT TESTING WITH VISUAL STUDIO WITH MSTEST AND XUNIT
MSUnit - Built-in into Visual Studio. Building and running Unit Tests with MSUnit. Using the Test Explorer Window. Using Test Settings. Live unit testing with Visual Studio. Unit Testing best practices with XUnit. Facts and Theories. Unit testing parallelism. Measuring and improving Code Coverage.

TACTICAL DESIGN
What is tactical design? Entities, Services, Aggregates, etc... Applying Tactical Design to a real world business case.

TACTICAL DESIGN - ENTITIES AND VALUE OBJECTS
Differentiating between Entities and Value Objects. Designing entities identity. Designing immutable value objects. Implementing Value Objects Equality efficiently. C# 9 records.

TACTICAL DESIGN - DOMAIN SERVICES AND MODULES
Providing domain specific operations with Services. Segregating concepts using Modules.

STRATEGIC DESIGN
The linguistic delimitation that are Bounded Contexts. Identifying the terms and concepts with the Ubiquitous Language. Relating Bounded Contexts with Context Maps.

TACTICAL DESIGN - LIFE CYCLE, AGGREGATES, FACTORIES AND REPOSITORIES
Clustering Entities and Value Objects with Aggregates. Abstracting the creation of Entities, Value Objects and Aggregates with Factories. Data storage by using Repositories. Abstracting queries using Specifications.

INTRODUCTION TO ENTITY FRAMEWORK CORE
What is Entity Framework Core? The need for Object Relational Mapping, especially with inheritance. Decoupling conceptual data structure from logical data structure. Querying data: APIs and LINQ.

ENTITY FRAMEWORK CORE
Differences with .NET (Framework) 4.x Entity Framework. Scaffolding your project from an existing database. Understanding the generated code. Interacting with the database with LINQ.

MODELING YOUR DATABASE WITH EF CORE
Methods of configuration. Creating and applying migrations. Table and column mapping. Modeling properties. Mapping Value generated properties. Handling Concurrent updates. Modeling relationships. Mapping inheritance.

ADVANCED EF: MAPPING DDD TO EF CORE.
DDD and Persistance Ignorance. Implementing Value Objects with Owned Properties. Using Shadow Properties to Avoid 'Leaky Abstractions'. Building Repository and Specification classes. Testing your Specifications. Entity Validation.

TACTICAL DESIGN - DOMAIN EVENTS
What are domain events? Publishing significant domain changes with Domain Events.

UNIT TESTING ASP.NET CORE WEB APPLICATIONS
Challenges when unit testing MVC applications. Writing unit test for your MVC controllers. Unit testing your views. Unit testing ApiControllers. Using the ASP.NET Core testing framework. End-to-end testing.

02 DAYS

EFFECTIVE UNIT TESTING

UTEST

16 - 17 December 2021
03 - 04 March 2022
05 - 06 May 2022
11 - 12 July 2022
22 - 23 September 2022

LEARNING GOALS
This couse guides you into the art of unit testing, where you learn to build testable code and various techniques to give your code a good spin. With unit testing, comes unit testing frameworks, we'll discuss how unit testing frameworks work and how they help you.

TARGET AUDIENCE
This course is intended for experienced programmers who are very familiar with VB.NET or C#.

UNIT TESTING IN .NET AND .NET 6
What every developer wants: Quality code that works; and keeps on working. Finding bugs: not just in code. - Or how NASA lost a 125.000.000$ Mars orbiter. What is unit testing? And what is a good unit test? Understanding the difference between a unit test and an integration test. Test Driven Development - Should you be doing it? Role-playing: Marge, Homer and Bart. The Triple-A of unit testing - and what has cooking to do with this?

UNIT TESTING WITH VISUAL STUDIO WITH MSTEST AND XUNIT
MSUnit - Built-in into Visual Studio. Building and running Unit Tests with MSUnit. Using the Test Explorer Window. Using Test Settings. Live unit testing with Visual Studio. Unit Testing best practices with XUnit. Facts and Theories. Unit testing parallelism. Measuring and improving Code Coverage.

SOLID PRINCIPLES
Single Responsibility. Open/Closed. Liskov Substitution. Interface Segregation. Dependency Inversion.

MORE LOOSE COUPLING USING DEPENDENCY INJECTION
What is tight coupling and how to prevent it? Using Inversion of Control (IoC) containers. Constructor and Property injection. Microsoft.Extensions.DependencyInjection as an example.

WRITING TESTABLE CODE
Testing dependencies - and the art of writing testable code. The difference between a Stub and a Mock. How to replace dependencies with stub and mock objects. The Extract and Override pattern. How the MVVM pattern facilitates UI testing. Replacing configuration in tests.

ISOLATION FRAMEWORKS: MOQ AND MICROSOFT FAKES.
Understanding Isolation Frameworks. Building Stubs and Mocks with MOQ. Checking arguments and return values. Using Linq to Mocks. What makes Microsoft Fakes so special. Testing legacy/untestable code. Building Stubs and Mocks with Fakes.

UNIT TESTING ASP.NET CORE WEB APPLICATIONS
Challenges when unit testing MVC applications. Writing unit test for your MVC controllers. Unit testing your views. Unit testing ApiControllers. Using the ASP.NET Core testing framework. End-to-end testing.

AUTOMATIC REGRESSION TESTING
What is a regression? Using an automated build system. Continuous integration. Running integration tests. Automatic regression tests.

05 DAYS

BUILDING MOBILE APPS WITH XAMARIN.FORMS

UMAUI

31 January - 4 February 2022
04 - 08 April 2022
20 - 24 June 2022
05 - 09 September 2022

LEARNING GOALS
Building a mobile app is never building one app. It's building one app for Android, one for Windows and one for iOS. Learning three platforms is time consuming, but the real problem is having to write the same code three times. Xamarin allows us to do this in a much more efficient way. One language to rule them all: C#, while staying true to the platform. Xamarin is based upon Mono, the open-source implementation of the .NET runtime. It is able to create cross-platform native apps with all features and the power the native platform has to offer. Because Xamarin's successor .NET MAUI is just around the corner, we'll look at what's to come as well.

TARGET AUDIENCE
Participants of this course need to have a good understanding of C# and a notion of mobile app development.

INTRODUCTION TO XAMARIN.FORMS
Mobile development options and problems. A uniform way for creating UIs. Creating a .NET Xamarin.Forms project. What about .NET MAUI?

BUILDING THE UI WITH XAML
What is XAML? XAML versus Code. Looking at XAML basic syntax Understanding XAML attached properties. Nesting controls. Extending XAML through markup extensions. Understanding namespace mapping. Naming elements.

CONTROLS OVERVIEW
Examining the Class Hierarchy. The power of composability. Presentation Controls, Command Controls, Editing Controls. Collection Controls. the trouble with images. Understanding bindable properties.

CONTROLLING THE LAYOUT
The layout process. Stacking controls with StackLayout. Tabular positioning with Grid. Flexible positioning using FlexLayout. Absolute positioning using AbsoluteLayout. Frames, Scrollview.

REUSABILITY WITH RESOURCES
Re-using Objects through Resources. Resource Inheritance. Resource Dictionaries. Theming your application. Multi-lingual applications.

STYLES AND TEMPLATES
Why we need Styles. Default, Implicit and Explicit Styles. Dynamic and Device styles. Styling using CSS. Theming an application. Introduction to control templates. Control Renderers. Effects.

DATA BINDING
The Need for Data Binding. Binding to Properties. Converting Data for Data Binding. Binding to Collections. Understanding Source and DataContext. Cell templates. Data Templates. Compiled Bindings

BUILDING ADAPTIVE AND SCALABLE LAYOUTS
Fixed Versus Adaptive Layout. Working with the ViewStateManager and Adaptive Triggers.

NAVIGATION
Navigation in Xamarin.Forms. NavigationPage, TabbedPage, FlyoutPage and modal pages. Shell Applications. Route-based navigation in Shell.

ADDING DEVICE SPECIFIC FEATURES
Shared Projects. Dependency Service. Effects. Using Platform specific controls.

XAMARIN.ESSENTIALS
Clipboard, Compass, Contacts, Device Information, Email. File Picker, Geolocation. Phone Dialer, Preferences, Secure Storage, Web Authenticator.

PROCESS LIFECYCLE MANAGEMENT
When Apps run. Handling Resume, Suspend and Termination. Supporting Different App Activation Scenarios. Splash Screens.

RUNNING IN THE BACKGROUND
Application Lifecycle. Platform-specific considerations. Android's activity life cycle and Services. iOS backgrounding techniques. Backgrounding in Windows.

STORING DATA
Local storage. Working with SQLite. Using Entity Framework Core.

CONSUMING WEB SERVICES
HttpClient and WebHttpRequest Class. Serialization and Deserialization.

DATA VALIDATION
INotifyDataErrorInfo. Data Annotations. Validation through events. Validation Templates.

MVVM
What is the MVVM Pattern? Using Commands instead of Event Handling. Defining the Model. Adding the ViewModel. Binding the View to the ViewModel.

NOTIFICATIONS
Platform-specific notification mechanisms. Local notifications. Push notifications.

THE ROAD TO .NET MAUI
Single Project Management. Dependency Injection. Model-View-Update. Blazor Integration. Simpler Control Extensibility. Roadmap. Migration from Xamarin.

03 DAYS

JAVASCRIPT FUNDAMENTALS

LEARNING GOALS
This course is the primer you need for any of your JavaScript endeavours, whether you want to build web sites, web servers with node, mobile apps, office extensions, tools, machine learning,... The list goes on.

TARGET AUDIENCE
This course is independent of the server-side technology you are using, so feel free to attend whether you use PHP, ASP.NET, Python, Ruby on Rails... A basic understanding of programming - in whatever language - is advised.

JAVASCRIPT INTRODUCTION
Why is JavaScript important? What is ECMAScript? Performance. Picking the right Libraries. Developer Tools.

JAVASCRIPT LANGUAGE FUNDAMENTALS
Using Variables. Primitives and Objects. Functions: more powerful than you'd expect. Understanding Scope. Strict Mode. Error Handling.

JAVASCRIPT COLLECTIONS
Storing multiple values in Arrays. Useful Functions and Operators. Using Objects as Maps. Sets, Maps and Others.

JAVASCRIPT CONSTRUCTORS AND CLASSES
Creating your own Objects using Constructors. Prototypes. Class syntax. Using Properties to encapsulate your fields. The 'this' keyword explained.

DEALING WITH ASYNC CODE IN JAVASCRIPT
Threading in JavaScript. Using Callbacks. Event Handling. Working with Promises. Async and Await.

STRUCTURING JAVASCRIPT APPLICATIONS AND TOOLING
Using Libraries. Content Delivery Networks. Getting Libraries with npm. Modules versus the Global Object. Using Task Runners like Gulp. Bundling and Minification Tools like WebPack. PolyFills and Transpilers like Babel and TypeScript. Tools for Code Quality.

REST SERVICES
REST. Verbs and URLs. XML and JSON format. Example with node.js and Express.

CLIENT-SIDE SERVICE CONSUMPTION
Getting data using AJAX. Fetch API. External Libraries. Vue.js Essentials. Loading Data in a Vue Application.

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05 DAYS

PROGRAMMING WITH HTML, CSS AND JAVASCRIPT

LEARNING GOALS
This course is about front-end (client-side) web development. It's what the user sees, touches and experiences in the browser. You'll learn how to build modern, interactive websites by learning the fundamentals of HTML, CSS, and JavaScript. This course is about the browser not the server.

TARGET AUDIENCE
This course is independent of the server-side technology you are using, so feel free to attend whether you use PHP, ASP.NET, Python, Ruby on Rails...
A basic understanding of programming - in whatever language - is advised.

THE HTTP PROTOCOL
Http Verbs. Headers. Status Codes. Cookies. Redirection. Caching.

HTML FUNDAMENTALS
Anatomy of a page. How a page is parsed. Some important HTML elements. Styling and Behavior.

FORMS
Form Elements. How Forms Work. Useful Attributes and Functions. Validation.

HTML SEMANTICS
The need for meaningful elements. Headers, content and footers. Articles and sections. Navigation elements. Meaningful figures. Dates and time.

CSS FUNDAMENTALS
Styling websites using CSS. CSS Selectors. Understanding Inheritance & Cascading behavior. Choosing the right unit.

PRINCIPLES OF WEB DESIGN
Layout and Composition. Color. Graphics. Typography. User Experience.

CSS POSITIONING
Understanding the Box Model. Flow. Display. Position.

CSS POSITIONING ADVANCED
Float. Flex Box. Grid. Page layout strategies.

RESPONSIVE WEB DESIGN WITH BOOTSTRAP
Normalizing and Resetting. The Grid System. Utility classes. Customizing look and feel. Components: navigation, popovers ...

JAVASCRIPT INTRODUCTION
Why is JavaScript important? What is ECMAScript? Performance. Picking the right Libraries. Developer Tools.

JAVASCRIPT LANGUAGE FUNDAMENTALS
Using Variables. Primitives and Objects. Functions: more powerful than you'd expect. Understanding Scope. Strict Mode. Error Handling.

JAVASCRIPT COLLECTIONS
Storing multiple values in Arrays. Useful Functions and Operators. Using Objects as Maps. Sets, Maps and Others.

JAVASCRIPT CONSTRUCTORS AND CLASSES
Creating your own Objects using Constructors. Prototypes. Class syntax. Using Properties to encapsulate your fields. The 'this' keyword explained.

DEALING WITH ASYNC CODE IN JAVASCRIPT
Threading in JavaScript. Using Callbacks. Event Handling. Working with Promises. Async and Await.

STRUCTURING JAVASCRIPT APPLICATIONS AND TOOLING
Using Libraries. Content Delivery Networks. Getting Libraries with npm. Modules versus the Global Object. Using Task Runners like Gulp. Bundling and Minification Tools like WebPack. PolyFills and Transpilers like Babel and TypeScript. Tools for Code Quality.

REST SERVICES
REST. Verbs and URLs. XML and JSON format. Example with node.js and Express.

CLIENT-SIDE SERVICE CONSUMPTION
Getting data using AJAX. Fetch API. External Libraries. Vue.js Essentials. Loading Data in a Vue Application.

BUILDING WEB APPS WITH ANGULAR AND TYPESCRIPT

03 DAYS

UANG

31 January - 02 February 2022
21 - 23 March 2022
23 - 25 May 2022
11 - 13 July 2022
12 - 14 September 2022

LEARNING GOALS

By using a componentized approach, Angular is better equipped than ever to build performant data-driven web-apps. While Angular takes care of data binding, navigation and server communication; TypeScript allows you to use the most advanced features JavaScript has to offer on any browser.

TARGET AUDIENCE

Good understanding of JavaScript, HTML and CSS and a notion of node.js and npm.

INTRODUCTION TO ANGULAR
Evolution in Web App Development. Basic Node.js and Angular project structure. Angular Core and Modules. TypeScript, Dart, Plain Old JavaScript.

STRONGLY TYPED JAVASCRIPT WITH TYPESCRIPT
Writing Application-Scale JavaScript. Type-Safe JavaScript Development with TypeScript. Typescript configuration. Implementing Types, Classes and Inheritance. Namespaces and Modules.

CORE CONCEPTS
Components. Modules. Services.

DATA BINDING
The Importance of Binding. Component to View. Structural Directives. Local Template Variables. Value Conversion. View to Component.

COMPONENTS
Using Multiple Components. Input and Output. ViewChild and ContentChild. EventEmitter. Directive Life Cycle.

ATTRIBUTE AND STRUCTURAL DIRECTIVES
Attribute Directives. Structural Directives. Built-in Directives. Custom.

DEPENDENCY INJECTION AND PROVIDERS
Terminology. Dependency Injection Basics. Services. Providers. Factories. Injection Tokens.

PIPES
Using a Pipe. Built-in Pipes. Custom Pipes. Pure versus Impure.

WORKING WITH FORMS
What's in a Form. Responding to Changes. FormBuilder. Data Validation.

TALKING TO THE SERVER
Sending and Receiving Data. HTTPClient Module. HTTP Interceptors. Observables versus Promises.

BUILDING A SINGLE PAGE APPLICATION
What is a SPA. Router Module. Route Configuration. Parent-Child Navigation. Route Guards.

MASTERING ANGULAR

03 DAYS

UANGA

22 - 24 November 2021
07 - 09 February 2022
11 - 13 April 2022
07 - 09 June 2022
16 - 18 August 2022

LEARNING GOALS

This training will take you from being an average Angular developer to a great one. You'll gain more insight in the workings of Angular and you'll explore more advanced programming techniques like RxJS, Redux and Advanced Forms. This course is constantly being updated to the latest version of Angular, currently Angular 11.

TARGET AUDIENCE

This course targets professional web developers that really want to master Angular. Participants of this course need to have a decent understanding of Angular and TypeScript.

REACTIVE EXTENSIONS FOR JAVASCRIPT
What are Reactive Extensions. Observable and Observer. Subjects. Cold versus Hot Observables. Making Async Calls. Combining Observables. Error Handling. Dealing with Back Pressure.

CHANGE DETECTION
Zones. How Change Detection Works. Immutables and Observables.

STATE MANAGEMENT WITH NGRX
The Redux Pattern. Major Principles. The Store, Actions and Reducers. Using RxJS within Redux. Efficient Slicing. Using Async Pipes. Tools.

BRINGING REDUX TO ANGULAR WITH @NGRX
Using RxJS within Redux. Efficient Slicing. Using Async Pipes.

THE NGRX STORE
Responsibilities. Normalizing Data. Initializing the Store.

NGRX REDUCERS
Useful Operators. Splitting Up Reducers. NgRx Effects.

SMART AND DUMB COMPONENTS
Characteristics of Dumb Components. Characteristics of Smart Components. Performance Impact.

STRUCTURING AN APPLICATION
Domain, Routing, Core and Shared Modules. Exporting and Providing. Clean Imports. Creating Libraries.

FORMS ADVANCED
Dynamically Adding Elements. FormArray. Nested Forms.

ANGULAR UNIVERSAL
AOT versus JIT compilation. Server-side rendering with Angular Universal. Hot-Loading with pre-boot.

TESTING
Challenges. Unit Testing. Jasmine Features. Karma. Writing Testable Code. Getting Started. Isolated Tests. Angular Testing Utility APIs.

CUSTOM COMPONENTS WITH SVG AND CANVAS
SVG Graphics. Canvas Graphics. Animating Graphics.

ANGULAR ELEMENTS
Custom Elements. Transforming Angular Components to Custom Elements. Packaging and Using your Custom Element.

DEVELOPING WEB APPS WITH REACT

LEARNING GOALS

In this training developers will learn how to use React and its component based development to create rich and dynamic websites.

TARGET AUDIENCE

This course targets professional web developers who are familiar with JavaScript.

INTRODUCTING REACT

The Evolution of Web Development. Components Everywhere. Combining React with other Libraries. React Tooling.

REACT FUNDAMENTALS

React App Structure. What is JSX. JavaScript Expressions. JSX Tips and Tricks.

STATE AND PROPS

Components are State Machines. How does Component State work. Props and Data Flow. Smart and Dumb Components.

HOOKS

Functional Components. State Hook. Effect Hook. Things to Know when Using Hooks. Building your own Custom Hooks.

WORKING WITH FORMS

What are refs and How do I use them Correctly? Value Binding to State. Controlled vs Uncontrolled Components. Sanitizing and Validating Input. Using Libraries to Manage your Forms.

TALKING TO THE SERVER

Fetch API. When and Where to Fetch Data? Using the Effect Hook.

COMPONENT COMPOSITION

props.children. Working with Context and the UseContext Hook. Rendering Dynamic Content with Render Props. Higher Order Components.

ROUTING

Introducing React Router. Paths and Parameters. Nesting Routes. Lazy Loading. Component Lifecycle.

PERFORMANCE

Virtual DOM.
Using Memoization and the Callback Hook.
Avoiding Computational Work.
Avoiding Re-rendering.
Pitfalls.

STATE MANAGEMENT

Externalizing State from Components. Redux: the State Management Pattern of Champions. Mobx: a Simpler, more Lightweight Alternative to Redux.

REDUX

What is Redux? Actors: Store, Actions, Reducers. View and Hooks. Asynchronous Actions. Tools.

JEST AND REACT

What is Jest? Creating Tests with Jest. Asynchronous Methods. Mocking. Testing React components using Snapshots.

MOBILE DEVELOPMENT WITH REACT NATIVE

LEARNING GOALS

React Native aims to reduce the complexity of cross-platform development by letting React developers reuse a lot of the skills they already possess.

TARGET AUDIENCE

This course targets professional web developers who are familiar with JavaScript.

INTRODUCTION TO REACT NATIVE

The World of Mobile Development. What is React Native? Why Choose React Native? Setting up a Development Environment.

GETTING STARTED WITH REACT NATIVE

Project Structure. Debugging an Application. Components. JSX. Building our first page. Adding application state. Reacting to user input.

LAYOUT AND STYLING

Styling and Layout in Mobile Applications. Layout with Flexbox. The React Native Styling system. Adding Animations to enhance User Experience.

MANAGING DATA AND RESOURCES

Data in Mobile Apps. Loading resources from an API. Working with ListViews. storing offline data with AsyncStorage. Working with Assets.

ROUTING AND NAVIGATION

Introducing React Navigation. Basic routing with Stack Navigation. Bringing navigation to the foregroung with Tab Navigation. Drawer Navigation: Save screen space while retaining easy navigation. Combining Navigators for a better flow in your app.

BUILDING WEB APPS WITH VUE.JS

LEARNING GOALS

Vue aims to be an approachable and progressive framework for building user interfaces. In this 2-day training developers will learn how to use Vue and its component-based development.

TARGET AUDIENCE

Professional web developers who are familiar with JavaScript and HTML.

INTRODUCTION TO VUE

The Evolution of Web Development. Components Everywhere. Vue Tools and Ecosystem.

VUE FUNDAMENTALS

Vue App Structure. The Vue Instance. Component Basics. LifeCycle Hooks.

DATA BINDING

The Importance of Binding. Directives. Event Handling. Conditionals and Loops. Computed Properties and Watchers. Filters. Class and Style Bindings.

VIEWMODEL IN VUE

Adding Interactivity. Methods. Computed Properties. Watchers.

COMPONENTS

Using Multiple Components. Passing Data with Props. Emitting Events. Content Slots.

WRITING SERVICES

What are Services? Provide / Inject.

TALKING TO THE SERVER

Fetch API. Where and When to Fetch Data? Loading and Error Indicators.

ROUTING

Vue Router Library. Routing Directives. Routing Configuration. Nested Routes. Navigation Guards.

COMPOSITION AND REUSABILITY

Mixins. Composition API.

MICROSOFT AZURE INFRASTRUCTURE SERVICES

05 DAYS

UAZUREA

22 - 26 November 2021
24 - 28 January 2022
14 - 18 March 2022
09 - 13 May 2022
27 June - 01 July 2022
05 - 09 September 2022

LEARNING GOALS
Microsoft Azure helps IT Professionals to build a scalable infrastructure to their needs. It reduces costs for the overall IT platform and allows you to extend your environment very quickly whenever necessary. The cost of the IT infrastructure is reduced because you only pay for what you really use.

TARGET AUDIENCE
This course is intended for IT professional technical specialists responsible for implementing and maintaining the IT environment.

AZURE OVERVIEW
Cloud Computing. Azure Benefits. Software as a Service (SaaS). Platform as a Service (PaaS). Infrastructure as a Service (IaaS). Global Azure Infrastructure. Azure Products Overview. SLA and Pricing. Azure Resource Manager.

AZURE MANAGEMENT
Azure Portal. Managing Azure with PowerShell. Managing Azure with the CLI. Azure Cloud Shell. Azure Resource Manager Templates.

MANAGING SUBSCRIPTIONS
Management Groups. Naming and Tagging. Resource Locks. Role Based Access Control (RBAC).

AZURE STORAGE
Azure Storage Types: Blob, Tables, Queues, Files and Disks. Storage Accounts. Secure Access to Storage. Working with Storage. Azure File Sync.

AZURE NETWORKING
Virtual Network Overview. Virtual Network Design. VNet Peering. Site-to-Site Connection. Point-to-Site Connection. ExpressRoute.

AZURE VIRTUAL MACHINES
Virtual Machines Overview, Pricing and Storage. VM Networking. Network Security Groups. Creating VMs. Connect to a VM: RDP, SSH, Bastion.

AZURE ADVANCED NETWORKING
Azure DNS. User Defined Networking. Service Endpoints. Private Endpoints. Azure Firewall.

MANAGE AZURE VMS
Disk Management. VM Extensions. VM Backup. Disaster Recovery. Update Management.

TROUBLESHOOTING AZURE VMS
Boot Diagnostics. Serial Console. RDP Connection Issues. Run Command. Azure Mobile App.

AZURE LOAD BALANCING
Azure Load Balancer. Application Gateway. Web Application Firewall. Traffic Manager. Azure Front Door. Comparing Load Balancing Solutions. VM Scale Sets.

AZURE WEB APPS
App Services and App Service Plans. Web Apps. Deployment. Deployment Slots. Web App Scaling. Backup and Restore. Adding a Custom Domain to your Web App. Enabling HTTPS.

AZURE SQL DATABASE
Azure SQL Database Service. Managed Instances. Pricing Models. Creating and Managing Databases. Connecting to SQL Azure Database. Business Continuity. Security.

AZURE GOVERNANCE
Management Groups. Azure Policy. BluePrints. Cost Management. Resource Graph.

AZURE ACTIVE DIRECTORY IDENTITY MANAGEMENT

02 DAYS

UAAD

02 - 03 December 2021
31 January - 01 February 2022
11- 12 April 2022
07 - 08 June 2022
29 - 30 August 2022

LEARNING GOALS
Azure Active Directory is a cloud identity solution that provides a set of capabilities to manage users and groups. Azure AD helps secure access to applications such as Microsoft online services (Office 365, Azure, Microsoft Intune, Power BI, ...) and a world of non-Microsoft SaaS applications.
Azure AD can be integrated with your on-prem Active Directory to simplify user management and provide a Single Sign-On experience. Multi-factor authentication adds an extra layer of security to the authentication process. Conditional access policies allow you to control under what circumstances users are allowed to access your resources..

TARGET AUDIENCE
IT Administrators responsible for user management in cloud services like Office 365, Azure, Intune and Dynamics 365.

AZURE ACTIVE DIRECTORY
Azure AD Overview. Azure AD Editions. Add a custom domain to Azure AD. User and Group Management. Password Management. Azure AD Business to Business. Company Branding.

AZURE AD CONNECT
Azure AD Connect Overview. Directory Synchronization. Password Synchronization. Troubleshooting Directory Synchronization.

PASS-THROUGH AUTHENTICATION
Pass-Through Authentication. High Availability. Seamless Single Sign-On.

ACTIVE DIRECTORY FEDERATION SERVICES
Federation Overview. Configure Active Directory Federation Services. High Availability. Azure AD Connect Health.

SECURING YOUR IDENTITIES
Multi-Factor Authentication. Identity Protection. Conditional Access.

AZURE AD PRIVILEGED IDENTITY MANAGEMENT
PIM Features. Managing Azure AD Roles and Azure Resources. Add Eligible Users. Activate Roles. Configure Access Reviews.

AZURE AD APPLICATION MANAGEMENT
Application Management Overview. Gallery Applications. Azure AD Application Proxy. Custom Developed Applications. Managed Identities.

03 DAYS

MANAGING CONTAINERS WITH KUBERNETES AND MICROSOFT AZURE

UACON

20 - 22 December 2021
28 February - 02 March 2022
20 - 22 June 2022

LEARNING GOALS
In this course students will learn to build Docker containers on both Windows and Linux. Students will deploy a Kubernetes cluster and learn how Kubernetes handles the deployment of applications across various nodes. Finally, students will take a look at the Azure services related to container management and maintenance.

TARGET AUDIENCE
This course is intended for experienced IT professionals. The technologies learned in the course can be useful for both on-prem and Azure deployments.

CONTAINERS
Containers Overview. Containers versus Virtual Machines. Container Fundamentals. Docker Editions.

WINDOWS AND LINUX CONTAINERS
Windows Containers. Deploy a Windows Container Host. Linux Containers on Windows. Linux Containers. Deploy a Linux Container Host.

DOCKER
Docker Overview. Docker Commands. Container Networking. Dockerfile. Docker Hub. Docker Compose. Docker Swarm.

KUBERNETES
Kubernetes Overview. Kubernetes Cluster. Cluster Hosting Options. Azure Kubernetes Service. Kubernetes Building Blocks: Pods, Volumes.

CONTAINER DEPLOYMENT WITH KUBERNETES
Deployments. Update a Deployment. Scaling. Networking in Kubernetes. AKS Networking Options. Services.

CONTAINER MANAGEMENT WITH KUBERNETES
Ingress. Secrets and ConfigMaps. Namespaces. Network Policies. Health Monitoring. Kubernetes Dashboard.

CONTAINER TECHNOLOGY IN AZURE
Azure Container Registry. Azure Container Instances. Web App for Containers.
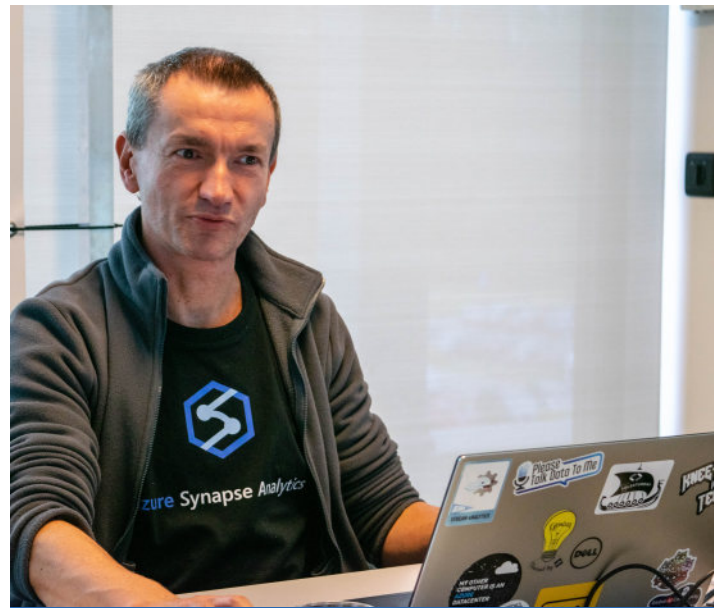
03 DAYS

GITOPS: INFRASTRUCTURE AS CODE WITH MICROSOFT AZURE

UAIC

28 February - 02 March 2022
19 - 21 April 2022
20 - 22 June 2022
22 - 24 August 2022

LEARNING GOALS
The core idea of GitOps is having a Git repository that always contains declarative descriptions of the infrastructure currently desired in the production environment and an automated process to make the production environment match the described state in the repository. In this course, you will learn about the tools that help you to setup this kind of deployment for your infrastructure.

TARGET AUDIENCE
IT Pros who are interested in learning how to deploy their cloud infrastructure in an easy, fully automated way.

INTRODUCTION TO GITOPS
What is GitOps? Why should you use GitOps? How does GitOps work? GitOps Services and Tooling: Git(Hub), Azure DevOps, Kubernetes, Terraform, Flux,...

AZURE RESOURCE MANAGER TEMPLATES
Infrastructure as Code. Authoring ARM Templates. Parameters, Variables, Resources, Output. Nested Templates. Validating ARM Templates: Test Toolkit, Pester.

TERRAFORM
Terraform Features. Configuration and Providers. Variables, Resources, Secrets. Terraform State.

DESIRED STATE CONFIGURATION (DSC)
Benefits of Desired State Configuration. DSC Components: Configuration, Resources, Compilation. Enact Your Configuration: Push or Pull mode. DSC Tools: PowerShell, Chef, Puppet.

THE BICEP LANGUAGE
Benefits of Bicep Versus Other Tools. Install Bicep Tools. Author Resources. Parameters, Variables, Outputs. Validate Files with Bicep Linter. Migrate from ARM Templates to Bicep.

SOURCE CONTROL WITH AZURE DEVOPS AND GITHUB
Version Control concepts. Distributed Source Control with Git and GitHub. Creating a local repository. Cloning a remote repository. Staging files. Committing files. Adding branches to your workflow. Branching Strategies. Merge vs. Rebase. Synchronizing with a remote repository. Pull Requests.

CONTINUOUS INTEGRATION WITH GITHUB ACTIONS
What is GitHub Actions?
Doing Continuous integration
What are jobs and steps?
Using variables
Defining and using secrets
Integrating with Azure using Publish Profiles or Service Principals

GITHUB WORKFLOW RUNNERS
Understanding Runners
Using GitHub hosted runners
Setting up a Windows hosted runner
Setting up a Linux hosted runner

CONTINUOUS DEPLOYMENT WITH GITHUB ACTIONS
 Release management and continuous deployment
Deploying Artifacts
Caching Dependencies
Using environments during deployment
Triggering workflows

LOG ANALYTICS AND SECURITY WITH MICROSOFT AZURE

02 DAYS

UASEC

17 - 18 February 2022
30 - 31 May 2022
22 - 23 September 2022

LEARNING GOALS

Microsoft Azure contains different monitoring tools, such as Azure Monitor, alerts and metrics to provide insights in your resources. The Log Analytics service collects all kinds of logging data in one central place. This data can be queried using a new, rich query language called Kusto. Collecting and analyzing security data is another important aspect of the It professional's job. Services like Azure Defender and Azure Sentinel can be a huge help in keeping the oversight on what is going on in the organization. They also help you to investigate suspicious activities and remediate incidents that have occurred.

TARGET AUDIENCE

This course is intended for IT professional specialists responsible for analyzing and securing the cloud IT environment.

AZURE MONITOR
Azure Monitoring Overview. Azure Monitor. Azure Advisor. Activity Log. Alerts and Metrics.

AZURE LOG ANALYTICS
Log Analytics Overview. Creating a Log Analytics Workspace. Log Analytics Agents for Windows and Linux. Collecting Data.

KUSTO QUERY LANGUAGE
Kusto Query Language. Writing Basic Log Queries. Filter Data. Aggregate Data. Using Variables. Joining Multiple Tables in a Single Query.

AZURE DEFENDER
Azure Security Center. Configure Security Policies. Protect Your Resources. Respond to Incidents. Just in Time VM Access. Adaptive Application Controls. File Integrity Monitor. Adaptive Network Hardening. Azure Secure Score.

AZURE SENTINEL
Azure Sentinel Overview. Azure Sentinel Connectors. Azure Sentinel Workbooks. Alert and Incident Management. Security Automation and Orchestration. Threat Hunting.
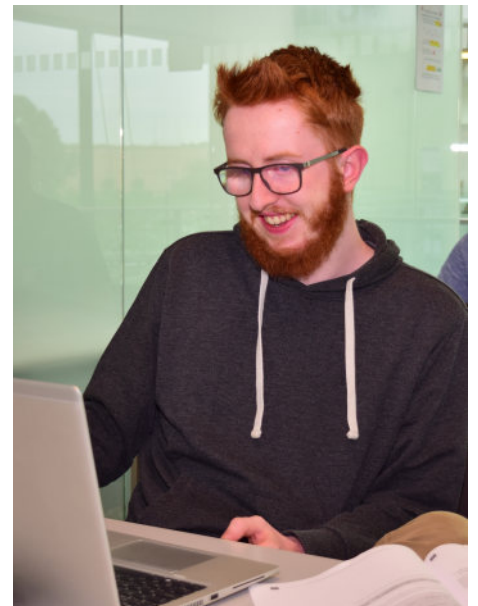
05 DAYS

DEVELOPING & DEPLOYING WEB APPS ON MICROSOFT AZURE

UAWEB

13 - 17 December 2021
07 - 11 February 2022
18 March - 01 April 2022
16 - 20 May 2022
08 - 12 August 2022

LEARNING GOALS
This training is designed to get developers up to speed with designing, developing, hosting and managing web applications using Microsoft Azure. Azure Web Apps and Azure Functions will contain your code; Azure SQL, Cosmos DB and Blob Storage will hold your data; and Message Brokers and Logic Apps will wire it all together. You will also learn about security, monitoring and automated deployment.

TARGET AUDIENCE
This course is indented for web developers who would like to get familiar with the web development services and tools of Microsoft Azure. A basic understanding of ASP.NET is expected.

MICROSOFT AZURE OVERVIEW FOR DEVELOPERS
Overview of Microsoft Azure. Usage Scenarios. Software as a Service (SaaS). Platform as a Service (PaaS). Infrastructure as a Service (IaaS). Pricing. The Azure Management Portals. The Azure Management Portals. Azure Components.

APP SERVICE PLANS
What is an App Service. Purpose of service plans. Creating a service plan. Scaling a service plan. Moving and cloning apps to other service plans.

APP SERVICES: WEB APPS
Deploying from Visual Studio. Configuring app settings, SSL, domain names and backup scheduling. Monitoring your Web App. Running/testing locally. Spinning up more website instances. How to implement traffic routing for A/B testing.

STORING YOUR DATA IN THE CLOUD
Advantages of storing data in the cloud. Microsoft Azure storage concepts. Storage APIs: Blob, File, Table and Queue. Securing your storage with Shared Access Signatures. Using the Azure CDN in your websites to serve your assets.

BROKERED MESSAGING IN THE CLOUD
Using Service Bus Queues for decoupling applications. Dispatching messages with Topics and Subscriptions. Adding filters to Subscriptions.

SERVERLESS COMPUTING WITH AZURE FUNCTIONS
Serverless Azure Functions. Function triggering options. Integrating with other Azure services. Sending triggers from your website via Azure Storage Queues.

SERVERLESS COMPUTING WITH LOGIC APPS
Workflow-like logic. Triggering a Logic App. Connectors and Actions. Controlling the flow: conditions,variables and iterations. Adding your own API's as custom connectors.

AZURE SQL DATABASE
Features and Service Tiers. Azure SQL Server and Azure SQL Database. Comparison with on-prem SQL. Backups and Replication. Authentication and Firewall.

SECURING YOUR APPLICATIONS AND APIS WITH AZURE ACTIVE DIRECTORY
Azure Active Directory. Basic Principles: Users, Groups, App Registrations, Roles and Scopes. Tokens and Claims. Authentication Scenarios. Microsoft Authentication Library.

ELIMINATE CREDENTIALS USING MANAGED IDENTITY
System-Assigned and User-Assigned Managed Identities. Storing secrets using Azure Key Vault. Accessing Blob Storage, Azure SQL and Service Bus.

LOGGING AND MONITORING YOUR APPLICATIONS
Implementing and configuring Application Insights. Server-side monitoring. Client-side monitoring. Snapshot Debugging: debugging from errors that happened on live web applications. Power BI dashboards.

REDIS CACHE
What is Redis Cache. Data types you can use in your cache. Accessing the cache. Redis Messaging. Implementing Redis Cache into your website.

STORING YOUR DATA IN COSMOSDB
What is Cosmos DB. Using document databases using the SQL API. Using document databases using the MongoDB API. Using Graph databases using the Gremlin API. Using key-value databases using the Table API. The Apache Cassandra API. Enterprise Readiness.

ARM TEMPLATES
The Azure Resource Manager. The purpose of Resource groups. Declarative syntax for ARM templates. Getting ARM-templates for your deployed resources. Creating templates in Visual Studio. Deploying with templates.

CI/CD WITH AZURE DEVOPS
DevOps Lifecycle. Planning. Build. Release Management. Auto-setup.

AZURE STATIC WEB APPS
Static Web Apps. API support with Azure Functions. Integrate with a GitHub Repository. Automated and Distributed Deployment.

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04 DAYS

MICROSOFT AZURE ARCHITECTURE MASTER CLASS

UACA

30 November - 03 December 2021
14 - 17 February 2022
25 - 28 April 2022
07 - 10 June 2022
19 - 22 August 2022

LEARNING GOALS
In this training we start from potential problems a cloud developer/architect may face. Then, we figure out what to do by using proven patterns. And finally, we look at various technologies available in Azure to implement these patterns.

TARGET AUDIENCE
People who want to become cloud developers/architects in Azure. Participants of this course need to have a solid developer background and must know the basics of Azure.

AZURE ARCHITECTURE INTRODUCTION
Azure Global Infrastructure. Architectural Building Blocks: Applications, Data, Communication and Others. Considerations: Availability, Resiliency, Performance, Cost, ...

MICROSERVICES
Dealing with Evolution in an Application. Benefits and Drawbacks. Communication: client-service, service-service. Data Isolation.

DESIGNING AN APPLICATION IN AZURE
Using an App Service Plan. Using an Orchestrator. Serverless. Multi-Region. Load Balancing. Azure Resources: Traffic Manager, Front Door, Load Balancer, Application Gateway.

SQL VERSUS NOSQL
Schemas and Relations. Data Consistency. Read and Write Performance. Partitioning and Scaling. Azure Resources: Azure SQL, Cosmos DB.

DESIGNING A DATABASE IN AZURE
Vertical versus Horizontal Scaling. Partitioning and Sharding. Multi-Region. Azure Resources: Azure SQL, Cosmos DB.

CACHING STRATEGIES
Azure Redis Cache. Cache-Aside Pattern. Read-Through and Write-Through. Materialized View Pattern. Valet Key Pattern. Azure CDN.

SYNCHRONOUS COMMUNICATION
Retry and Circuit Breaker Throttling. Bulkhead Pattern. Ambassador Pattern.

ASYNCHRONOUS COMMUNICATION
Queue-Based Load Leveling. Event-Based Communication. Messages, Events and Commands. Azure Resources: Service Bus, Event Grid, Storage Queue.

DESIGNING A MESSAGE BROKER IN AZURE
Partitioning. Claim-Check Pattern. Azure Resources: Event Grid, Event Hub.

DATA CONSISTENCY
Strong Consistency. CAP Theorem. Eventual Consistency. Outbox Pattern. Compensating Transaction Pattern.

CQRS AND EVENT SOURCING
The Problem with CRUD. Read and Write Models. Commands. Event Store.

EXTERNAL COMMUNICATION
API Gateway. Backend for Frontends. Webhooks. Asynchronous Request-Reply. Azure Resources: Front Door, Application Gateway, API Management.

SECURITY CONCERNS
Options for Storing Sensitive Data. Azure Key Vault and Managed Identity. Service Authentication. Security on Infrastructural Level: Virtual Networks, Firewalls,... GateKeeper Pattern.

DEVELOPING MICROSERVICES WITH CONTAINERS, KUBERNETES AND MICROSOFT AZURE

03 DAYS

UAMIC

20 - 22 December 2021
23 - 25 February 2022
09 - 11 May 2022
01 - 03 August 2022

LEARNING GOALS

A Container is a virtualization technology used to implement scale-out applications that require greater efficiency and scalability.

TARGET AUDIENCE

This course is intented for experienced .NET developers who would like to get acquainted with Docker containers and Microservices on Azure.

CONTAINERS
Why Containers? Containers vs Virtual Machines. Linux, Windows and Hyper-V Containers. Container Orchestration.

DOCKER
Running Docker. Containers, Images and Registries. Building an Image. Port Mapping and Volumes. Container Orchestration.

ADD ASP.NET APPLICATIONS TO CONTAINERS
.NET or .NET Core? Official .NET Docker Images. Working with Databases. Tools.

AZURE FOR CONTAINER OVERVIEW
Azure Container Registry. Hosting Containers: Container Instances, AKS. Service Fabric. Deploy with Containers: Web Apps, Batch and Functions.

MICROSERVICE ARCHITECTURE
Dealing with Evolution in an Application. Benefits and Drawbacks. Scaling. Versioning. Communication: client-microservice, service-service, event-based. Data Isolation per microservice. Migration from a monolith. Securing Microservices.

KUBERNETES
Kubernetes Cluster. Kubectl and YAML. WorkLoads: Pods and Deployments. Communication: Services and Ingresses. Scaling and Updates. Health Monitoring.

AZURE CONTAINER SERVICE (AKS)
Putting a Kubernetes Cluster in Azure. AKS Features. Using Helm Charts.

BRIDGE TO KUBERNETES
Debugging in AKS. Bridge to Kubernetes Concept. Using Bridge to Kubernetes. Client-side Tooling. Working in Isolation in a Shared Development Environment. Routing.

API GATEWAYS
Benefits/Drawbacks. Implementation Options. Azure API Management.

ASYNCHRONOUS COMMUNICATION
Communication Patterns. Event-Based Communication. Event Bus. Integration Events. Eventual Consistency. Azure Service Bus.

SYNCHRONOUS COMMUNICATION
Problems with Direct Communication. Retry. Circuit Breaker. Sidecar Pattern. Service Mesh.

TEAM DEVELOPMENT WITH AZURE DEVOPS

03 DAYS

UTFS

24 - 26 November 2021
17 - 19 January 2022
21 - 23 March 2022
23 - 25 May 2022
08 -10 August 2022

LEARNING GOALS

In this course you will learn about using Azure DevOps, formerly known as Visual Studio Team Services (VSTS), to manage the application development lifecycle. This training will show you the role of the project manager, developer and tester in this process and how DevOps can improve the efficiency and code quality of your team.

TARGET AUDIENCE

.NET developers, project managers, testers and anyone who is involved in application development.

AZURE DEVOPS SERVICES
Azure DevOps: The big picture. Features. Architecture. The Extensions Marketplace.

AZURE DEVOPS TEAM PROJECTS
Development Processes. Team Projects and Process Templates.

PROJECT MANAGEMENT WITH AZURE BOARDS
Iterative Development. Creating the project backlog. Work Items and Queries. Velocity and Forecasting.

PLANNING A SPRINT
Sprint Planning. Identifying user stores for the next sprint. Capacity planning. Defining tasks to complete a user story. Adjust work to fit team capacity. Sharing a sprint with stakeholders.

RUNNING THE SPRINT
Running a sprint. The daily standup meeting. Burndown chart. Team dashboard.

STORING DEVELOPER ASSETS IN AZURE REPOS
Version Control concepts. Distributed Source Control with Git. Creating a local repository. Cloning a remote repository. Staging files. Committing files. Adding branches to your workflow. Branching Strategies. Merge vs. Rebase. Synchronizing with a remote repository. Pull Requests.

CONTINUOUS INTEGRATION AND DEPLOYMENT WITH AZURE PIPELINES
What is Team Build? Doing Continuous integration. Creating Build processes with the new componentized build. What are jobs, tasks? Integrating with other systems (such as GitHub) using Service Connections. Integrating with other systems (such as GitHub) using Service Connections.

AZURE RESOURCE MANAGER TEMPLATES
Infrastructure as Code. Authoring ARM Templates. Parameters, Variables, Resources, Output. Nested Templates.

CONTINUOUS DEPLOYMENT WITH AZURE PIPELINES
Release management and continuous deployment. Release definitions. Approving releases with release gates. Choosing between deployment patterns. Notifications with Service Hooks. What are Agents? Setting up a build agent in your enterprise network. Understanding ChatOps.

AZURE TEST PLANS
Types of tests. Test planning. Test Plan, test suite, test case. Running manual tests using the Test Runner. Parameters and Shared Steps. Creating bug work items.

DEVELOPING INTELLIGENT SOLUTIONS WITH THE MICROSOFT AI PLATFORM

03 DAYS

UADAI

17 - 19 January 2022
02 - 04 May 2022
04 - 06 July 2022
26 - 28 September 2022

LEARNING GOALS

AI is not just for the greats, it's at the fingertips of any developer without having to be a data scientist. In this course you are taken through all relevant topics to build intelligent applications.

TARGET AUDIENCE

Participants of this course need to have a decent understanding of .NET and preferably some experience with Microsoft Azure.

WHAT IS ARTIFICIAL INTELLIGENCE?
Definitions of Artificial Intelligence. Domains of Artificial Intelligence. History, Current State and Future.

BOTS
The Microsoft Bot Framework. Debugging your bot with the bot Emulator. Turns, Messages and Activities. Conversations and Channels. Designing a Dialog Flow. Prompts, Waterfalls and Components.

MACHINE LEARNING
Supervised vs Unsupervised. Machine Learning Process. Deep Learning. Data Preparation. Tools.

AZURE COGNITIVE SERVICES
What is Cognitive services? Image Classification, Recognition and moderation. Person Identification. Speech-to-text, text-to-speech. Speaker recognition and real-time translation. Visual Search. QnA.

ML.NET
Loading and Transforming Data. Prediction and Evaluation. Importing and Exporting Models. Experiments. Automated Machine Learning.

NATURAL LANGUAGE PROCESSING WITH LUIS
The Language Understanding Intelligent Services (LUIS). Intents, Entities and Utterances. Using prebuilt models. Entity types. Training and testing LUIS. Calling LUIS from a bot. Integrating LUIS with Speech. Comparison with Watson.

AZURE MACHINE LEARNING DESIGNER
Working with Datasets. Data Preparation. Exploring modelling techniques. Training and evaluating models. Automated ML. DevOps for ML.

EXPOSING YOUR CONTENT TO AI WITH SEARCH
Setting up Search Indexing. Filtering, Sorting, Facets, ... Query Syntax. Cognitive Search and Content Augmentation. Consuming your Search Service.

DATA ENGINEERING ON MICROSOFT AZURE

LEARNING GOALS

Microsoft Azure offers a broad range of services like Azure Data Factory, Azure Data Lake, Azure Databricks and Azure Synapse Analytics helping you build your data warehouse in the cloud. This training will cover all aspects of designing and implementing a data warehouse on Microsoft Azure. Participants will leave the training with hands-on experience with all Microsoft Azure services to explore, prepare, manage and serve data for immediate BI or machine-learning needs.

TARGET AUDIENCE

This course focusses on developers and administrators who are considering migrating existing data solutions to the Microsoft Azure cloud. Some familiarity with relational database systems such as SQL Server is handy. Prior knowledge of Azure is not required.

THE MODERN DATA WAREHOUSE

From traditional to modern data warehouse. Lambda architecture. Overview of Big Data related Azure services. Getting started with the Azure Portal.

STORING DATA IN AZURE

Azure Blob Storage. Azure Data Lake Storage Gen 2. Tools for uploading data. Storage Explorer, AZCopy and PolyBase.

INTRODUCING AZURE DATA FACTORY

Data Factory V2 terminology. Setup a Data Factory with GIT support. Exploring the Data Factory portal. Creating Linked Services and Datasets. Copying data with the Data Factory wizard.

AUTHORING PIPELINES IN AZURE DATA FACTORY

Adding activities to the pipeline. Working with Expressions. Variables and Parameters. Debugging a pipeline.

CREATING DATA FLOWS IN DATA FACTORY

From ELT to ETL. Creating Data Factory Data flows. Exploring the Power Query activity.

DATA FACTORY INTEGRATION RUNTIMES

Integration runtime overview. Controling the Azure Integration Runtime. Setup self-hosted Integration Runtimes. Lift and shift SSIS packages in Data Factory.

DEPLOYING AND MONITORING DATA FACTORY PIPELINES

Adding triggers to pipelines. Deploying pipelines. Monitoring pipeline executions. Restart failed pipelines.

AZURE SQL DATABASE

Provisioning an Azure SQL Database. Migrating an on-premisses Data Warehouse to Azure SQL Database. Ingesting Azure Blob Storage data. Working with Columnstore Indexes.

AZURE SYNAPSE ANALYTICS

Overview of Azure Synapse Analytics. Provisioning an Azure Synapse Analytics Workspace. Getting started with Azure Synapse Studio. Ingesting data. Working with on-demand SQL Pools. Using notebooks on Spark Pools.

AZURE SYNAPSE ANALYTICS PROVISIONED SQL POOLS (AZURE DATA WAREHOUSE)

Architecture of Provisioned SQL Pools. Loading data via PolyBase. CTAS and CETAS. Setting up table distributions. Indexing. Partitioning. Performance monitoring and tuning.

GETTING STARTED WITH AZURE DATABRICKS

Introduction Azure Databricks. Cluster setup. Databricks Notebooks. Collaborative features in Databricks.

ACCESSING DATA IN AZURE DATABRICKS

Uploading data. Connecting to Azure Storage and Data Warehouse. Mounting Azure Blob storage. Accessing data in an Azure Data Lake Gen 2. Dealing with malformed data. Processing Spark Dataframes in Python. Using Spark SQL. Working with Delta Lake.

DEPLOYING AN AZURE DATABRICKS SOLUTION

Azure Databricks jobs. Working with Databricks Widgets. Calling Databricks Notebooks from within Azure Data Factory pipelines.

MODELING DATA WITH AZURE ANALYSIS SERVICES

Online Analytical Processing. Analysis Services Tabular. Creating a model on top of Azure Storage or Azure Data Warehouse Model deployment. Processing. Model management.

AZURE DATA EXPLORER

Data Explorer architecture. Ingesting data in Data Explorer. Querying and visualizing data with Kusto. Accessing Data Explorer from Data Factory and Power BI.

REAL-TIME EVENT PROCESSING WITH AZURE STREAM ANALYTICS

Lambda architecture. Create Azure Stream Analytic jobs. Azure Event Hubs. Connecting inputs and outputs. Writing Stream Analytic queries.

ADMINISTERING AZURE SQL DATABASES

LEARNING GOALS

Participants of this course will learn from both a DBA and database developer's perspective how to setup and implement Azure SQL databases. The complete database lifecycle from creating and configuring your servers and databases, developing new database objects or migrating existing databases and client applications will be covered.

TARGET AUDIENCE

This 4-day course is intended for DBA's and database developers who want to move their databases to Azure SQL. Participants of this course need to have a basic understanding of the Microsoft SQL Server platform.

INTRODUCTION TO AZURE SQL

What is Azure SQL? Azure SQL Architecture. Azure SQL Pricing. Azure SQL Service Tiers and DTU's. Limitations of Azure SQL. Differences between Azure SQL Databases and Azure SQL Managed Instances.

PROVISIONING AZURE SQL DATABASES

Creating and configuring a Server in Azure SQL. Creating and configuring an Azure SQL Database. Implementing Firewall Rules. Azure SQL networking overview. Overview of the Azure SQL Management Tools.

PROVISIONING AZURE SQL MANAGED INSTANCES

Azure SQL Managed Instance overview. Differences between an On-Premises SQL Server and an Azure SQL Managed Instance. Virtual Networks and Azure SQL Managed Instances. Provisioning and configuring an Azure SQL Managed Instance. Accessing Azure SQL Managed Instances. Optional LAB: creating an Azure SQL Managed Instance.

CREATING AND MIGRATING AZURE SQL DATABASES

Creating tables, views, stored procedures, ... Migrate an existing SQL Server database to Azure SQL. The Data Migration Assistant. Exporting and Importing BACPAC files of a SQL Database. The Azure Database Migration Service. Copy an Azure SQL Database.

AZURE SQL DATABASE CLIENT CONNECTIVITY

Connectivity Overview. Available Connectivity Libraries. Azure SQL Database Connection Strings.

ELASTIC DATABASES AND POOLS

Introducing Elastic Database Pools. Implementing Elastic Database Pools and working with eDTU's. Creating Elastic Database Pools. Configuring Elastic Databases. Monitoring Elastic Database Pools.

Creating Elastic Jobs. Introducing instance pools in SQL Managed Instance.

SECURING USER ACCESS TO AZURE SQL

Authentication overview. Configuring Authentication. Configuring Authorization. Creating Logins and Users. Working with contained databases.

SECURING AZURE SQL

Network security. Auditing in Azure SQL. Azure Defender for SQL. Advanced Thread Protection. Always Encrypted. Data Discovery and Classification. Dynamic Data Masking.

MONITORING AND TUNING IN AZURE SQL

Working with Extended Events. The SQL Server Query Store. Query Performance Insight in Azure SQL Databases. Azure SQL Analytics. Automatic tuning in Azure SQL. Monitoring using DMVs.

BACKUP AND RESTORE IN AZURE SQL

Automatic backups in Azure SQL. Backup retention and storage. Configure Long-term backup retention. Perform manual backups with Azure SQL Managed Instances. Perform a Point-in-time restore. Long-term database restore. Geo-restoring databasesL.

HIGH AVAILABILITY AND DISASTER RECOVERY

Business Continuity overview. High Availability in the Basic, Standard and General-Purpose service tiers. High Availability in the Premium and Business Critical service tiers. Active geo-replication. Auto-failover groups.

MICROSOFT AZURE

02 DAYS

UACIT

29 - 30 November 2021
07 - 08 February 2022
21 - 22 April 2022
27 - 28 June 2022
05 - 06 September 2022

LEARNING GOALS

In this two-day course the basic concepts of Machine Learning for citizen data science are covered. A number of tools are introduced that can be used to create and deploy ML models without a lot of Machine Learning or coding knowledge in Microsoft Azure.

TARGET AUDIENCE

This course is intended for people who plan on using machine learning without writing code. This can be BI developers, data analysts as well project managers.

MACHINE LEARNING FOR THE CITIZEN DATA SCIENTIST

INTRODUCTION TO MACHINE LEARNING

What is machine learning? Why would we use Machine Learning? Machine Learning methodology. Data preprocessing. Modeling. Model evaluation: measuring quality.

TOOLS FOR CITIZEN DATA SCIENTISTS IN AZURE

Overview Machine Learning in Azure. Pretrained models. Transfer learning. Graphical approaches. Coding approaches.

COGNITIVE SERVICES

Overview of cognitive services. Pretrained services. Customizable services. LUIS.

**AZURE MACHINE LEARNING SERVICE: AUTOMATED ML**

Introduction to Azure Machine Learning Service. Important concepts Azure ML. Building Automated ML Models. Deploying and consuming an Automated ML model.

AZURE MACHINE LEARNING SERVICE: DESIGNER

What is the Designer? Loading data. Preprocessing data. Creating Machine Learning Models. Deploying models.

AI FEATURES IN POWER BI

Introduction to Power BI. Using ML models in Power BI Data Flows. More machine learning options in Power BI.
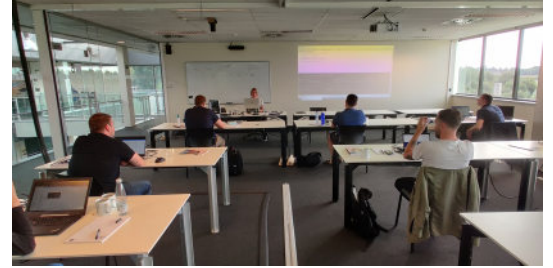
02 DAYS

UADS

24 - 25 November 2021
09 - 10 February 2022
20 - 21 April 2022
29 - 30 June 2022
07 - 08 September 2022

LEARNING GOALS

Data science converts data into insights by applying techniques from the field of artificial intelligence and machine learning. This training starts from data that has already been prepared and uploaded to Azure.

TARGET AUDIENCE

This course focusses on developers and data scientists who are considering the Azure stack for applying machine learning on their data.

DATA SCIENCE WITH PYTHON ON THE MICROSOFT AZURE PLATFORM

MACHINE LEARNING INTRODUCTION

Supervised versus unsupervised learning. Machine learning methodology. Data preparation. Classification, regression and clustering. Model evaluation. Cognitive services. Automated ML in Azure ML Services. Working with the Azure ML Designer.

GETTING STARTED WITH PYTHON

Introducing the Python programming language. Python environments. Interactive development with Azure notebooks. Variables and objects. Common data structures: Lists, tuples, sets and dictionaries. Functions. Creating and using classes.

DATA PROCESSING WITH SCIPY

Numerical Python: Numpy. Numpy data structures. Pandas DataFrames. Loading data with pandas. Data manipulations with Pandas.

DATA INSPECTION

Plotting with pandas. Introducing the matplotlib package. Using the seaborn package. Creating interactive plots with Plotly.

MACHINE LEARNING WITH SCIKIT-LEARN

Machine learning specific data preprocessing: normalization, standardization, one-hot encoding. Classification using decision trees, logistic regression and support vector machines. Model tuning: working with hyper-parameters. Building regression models with linear regression, SVM's and Neural networks. Unsupervised learning: Clustering.

AZURE MACHINE LEARNING SERVICES

Azure ML service overview. Create a ML service workspace. Setting up computes and datastores. Creating and querying experiments. Deploying and using models. Creating and registering images. Deploy images as web services.

GETTING STARTED WITH DEEP LEARNING

From Neural networks to Deep learning. Overview of deep learning frameworks. Getting started with the Keras framework.
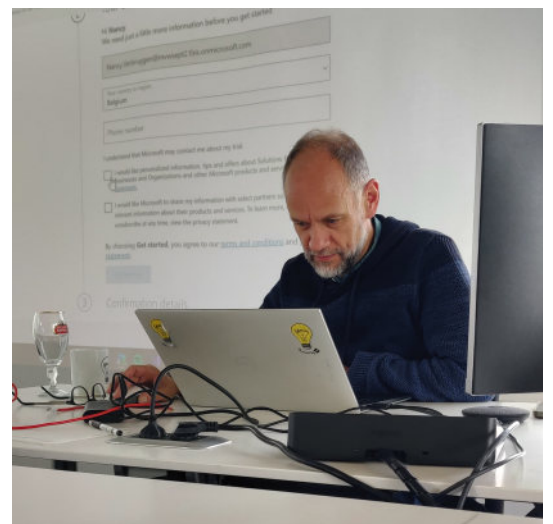
05 DAYS

USPOP

LEARNING GOALS

SharePoint Online, part of Microsoft 365, provides an extensive range of features that allows you to build powerful web-based collaboration and communication platforms. In this course you will get hands-on experience with the SharePoint user interface, the different document management features like metadata, versioning and co-authoring and you will learn how to create, structure and secure Share-Point sites. You will leave the training with the skills to build powerful collaboration and intranet environments in SharePoint Online while integrating many Microsoft 365 products like Microsoft Teams, Power Apps and Power Automate.

TARGET AUDIENCE

This course targets both IT professionals and business users interested in learning the ins and outs of the SharePoint Online functionalities. Participants will leave the training with the skill set necessary to become a SharePoint key user, content manager, site owner... No prior SharePoint Online knowledge is required.

MICROSOFT SHAREPOINT ONLINE FOR POWER USERS

POSITIONING SHAREPOINT ONLINE AND MICROSOFT 365
Understanding Microsoft 365 & Office 365. Microsoft 365 & Office 365 Licensing. SharePoint Online feature overview. Overview of other Office 365 Services: Microsoft Teams, OneDrive for Business, Power Platform...

MODERN SHAREPOINT SITES
What is a SharePoint Site? Creating and configuring SharePoint Sites. Classic vs Modern Sites. Team Sites vs. Communication Sites. Team Sites and Microsoft 365 Groups. Discovering Site Templates. The SharePoint look book. Changing the look and feel. Site Usage.

BUILDING MODERN COLLABORATION & INTRANET ENVIRONMENTS
What is a Hub Site? Structuring Teams sites and Communication Sites with Hub Sites. Hub Sites Shared configuration. Content aggregation. Configuring the SharePoint Home Site and Viva Connections. Configuring the Home Site. Planning Global, Hub and Local Navigation.

SHAREPOINT CONTENT MANAGEMENT
Fundamentals of Lists and Libraries. Working with the Filter and Details Pane. Working with metadata and different column types. Managing what you see with views. Provide rich experiences with Column and View Formatting. Exporting and Importing Data. Microsoft Lists

ENTERPRISE CONTENT MANAGEMENT
Providing reusable metadata with Site Columns. Metadata at enterprise level with the Managed Metadata Service. Terms and TermSets Content Type guidelines. Working with Document Templates. Publishing of Enterprise Content Types with the Content Type Gallery.

WORKING WITH MODERN PAGES
Working with Modern Site Pages. Enriching your pages with web parts. Authoring and publishing a Modern Page. Publishing News. Page approval. Multilingual Pages.

DOCUMENT MANAGEMENT
Working with Views in Modern Document Libraries. Keep track of different versions. Configure check-out and Approval. Grouping documents in Document Sets. Receive email Alerts. Co-Authoring on Office documents. Recycle Bin

ONEDRIVE FOR BUSINESS
Store Work Files in OneDrive. OneDrive Mobile Apps. Synchronize your documents with different devices. Files On-Demand.

MICROSOFT TEAMS
Microsoft Teams Feature Overview: Chat, Teams, Meetings, Phone System. Connecting a Team to an Microsoft 365 Groups. Desktop, Mobile and Web Teams Client. Teams, Channels, Tabs, Apps and Connectors. Microsoft Teams configuration options. Integrate SharePoint Online in Microsoft Teams with Tabs. Using the Lists app in Microsoft Teams. Microsoft Teams Governance and Lifecycle Management.

USER MANAGEMENT & PERMISSIONS
SharePoint site security architecture. Simplified access with Site Owners, Site Members and Site Visitors. Configuring Site Permissions and Group Membership. Microsoft 365 Groups Permissions Sharing Options. External Sharing in SharePoint Online. Guest and Anonymous Access.

MICROSOFT SEARCH
What is Microsoft Search? Search Query Syntax. Managing the Search Schema. Manage Bookmarks, Acronyms, Floor Plans, Locations and Q&A. Index third-party data with Microsoft Graph Connectors. Customize the end-user UX: Verticals, Result types and Search Result Layouts.

COMPLIANCE FEATURES
Manage Classifications: Labels, Policies and Sensitive Information Types. Data Loss Prevention. Data Deletion Policies. Data Governance: Archive, Retention, Disposition and Revision

MICROSOFT POWER APPS
What is Microsoft Power Apps?. Power Apps Flavours. Power Apps pricing. Creating a Power App from a template, from a data source or from blank. Adding Screens and controls to your app. Building custom SharePoint list forms with Power Apps. Adding a Power App as a webpart to a SharePoint page.

MICROSOFT POWER AUTOMATE
What is Microsoft Power Automate? Power Automate pricing. Using out-of-the-box flows in SharePoint Online. Building flows from a template. Working with approvals. Building flows from scratch: Adding triggers and actions. Running and managing flows.

USPOT — 02 DAYS

MICROSOFT SHAREPOINT ONLINE TECHNOLOGY OVERVIEW

In this SharePoint training you will get a technology overview of SharePoint Online, part of Office 365. You will discover the different areas and capabilities of the product. The goal is to make you familiar with all the SharePoint features like Document Management, Collaboration, Search... position the role of the end users, power users, developers and administrators and help you to make better technology decisions. This course does not include any hands-on exercises. Details see www.u2u.be/cc/uspot.

USP19A — 03 DAYS

ADMINISTERING SHAREPOINT SERVER 2016/2019

This course will provide you with the knowledge and skills to install, configure, manage and maintain a Microsoft SharePoint Server 2016/2019 environment by using the SharePoint Central Administration and Powershell. This course will provide necessary guidelines, best practices, and considerations that will help you optimize your SharePoint server deployment. Details see www.u2u.be/cc/usp19a.

USP19P — 05 DAYS

SHAREPOINT SERVER 2016/2019 FOR POWER USERS

U2U offers 2 different versions of this course targeting SharePoint Server 2016 and SharePoint 2019. Please consult our website for a detailed course description. SharePoint contains a rich set of features and functionalities allowing you to build a platform supporting your business needs. This course will teach you the out-of-the-box functionalities of the product. You will get hands-on experience with the SharePoint user interface and you will learn how to create, configure, secure and maintain SharePoint sites.
Details see www.u2u.be/cc/usp19p.

MICROSOFT 365 EMPLOYEE EXPERIENCE WITH MICROSOFT VIVA

03 DAYS

UVIVA

24 - 26 January 2022
28 - 30 March 2022
16 - 18 May 2022
11 - 13 July 2022
26 -28 September 2022

LEARNING GOALS

Microsoft 365 and Microsoft Viva bring together communication, knowledge, learning and insights into an integrated experience that empowers people and teams to be their best, from anywhere. In this course you will get hands-on experience with a variety of Microsoft 365 services to improve the experience of your colleagues in Microsoft 365.

TARGET AUDIENCE

This course targets both IT professionals and business users interested in learning the ins and outs of building a true employee experience with Microsoft 365. Basic experience with Microsoft 365/Office 365 is advised.

MICROSOFT 365 EMPLOYEE EXPERIENCES WITH MICROSOFT VIVA, TEAMS AND SHAREPOINT

Understanding Microsoft 365. Introducing SharePoint Online Collaboration and Communication. The 4 components if Microsoft Viva. Is Microsoft Viva the new Intranet?. Collaboration with Microsoft Teams. Microsoft 365 Licensing. SharePoint Online feature overview.

SHAREPOINT ONLINE COMMUNICATION SITES

What is a SharePoint Site? Creating SharePoint Sites. Team Sites vs. Communication Sites. Team Sites and Microsoft 365 Groups. Discovering Site Templates. The SharePoint look book. Changing the look and feel.

WORKING WITH MODERN SHAREPOINT PAGES

Working with Modern Site Pages. Enriching your pages with web parts. Authoring and publishing a Modern Page. Publishing News Page Approval. Multilingual Pages.

BUILDING MODERN INTRANET ENVIRONMENTS IN SHAREPOINT ONLINE

Structuring your intranet with Hub Sites. Configuring Hub Site Settings. Hub Site content aggregation. Configuring the Home Site. Planning Global, Hub and Local Navigation.

VIVA CONNECTIONS

Introducing Microsoft Viva Connections. Configuring SharePoint Online prerequisites. Branding and Deploying the Viva Connections app in Microsoft Teams. Microsoft Teams App Policies. Authoring a Microsoft Viva Connections Dashboard in SharePoint.

MICROSOFT SEARCH

What is Microsoft Search? Search Query Syntax. Managing the Search Schema. Manage Bookmarks, Acronyms, Floor Plans, Locations and Q&A. Index third-party data with Microsoft Graph Connectors. Customize the end-user UX: Verticals, Result types and Search Result Layouts. LAB: Microsoft Search.

VIVA TOPICS

What are Topics?. Reviewing AI suggested Topics. Create and edit Topics Manually. Manage Topic Discovery and Visibility. Viva Topics and Microsoft Search.

ENRICHING EMPLOYEE EXPERIENCE WITH THE POWER PLATFORM AND MICROSOFT VIVA

Integrating Personal and Manager Insights with Microsoft Viva Insights. Better Time Management and Team Management with Viva Insights. Automation and approval with Power Automate. Building new apps for Microsoft Teams or Mobile with Power Apps. Integrate Learning with Microsoft Viva Learning.

OFFICE 365 ESSENTIALS

03 DAYS

U0365P

24 - 26 January 2022
04 - 06 April 2022
23 - 25 May 2022
01 - 03 August 2022

LEARNING GOALS

This training introduces students to Microsoft 365 and the different software products it contains. They will learn about the basic use of the platform and key administrative settings to manage the platform. The focus will be on all key components of Office 365: Microsfot Teams, SharePoint Online and Exchange Online. You will learn how to configure Office 365, how to create a mailbox, setup a SharePoint site and configure conferencing and collaboration with Microsoft Teams. On top of this, this training will make you familiar with many of the other Office 365 products like Planner, Power Apps, Power Automate and Forms.

TARGET AUDIENCE

Business users who need a strong knowledge of the different Office 365 Services.

UNDERSTANDING MICROSOFT 365

Introduction to Microsoft 365. Key Microsoft 365 Features. Microsoft 365 Subscription plans. Office 365 Connectivity. Office 365 Security. Office 365 Service Continuity.

MANAGING OFFICE 365

Managing Clients. Office 365 Management Portals. Compliance Features.

USER MANAGEMENT

Overview of Azure AD. Managing Users. Managing Groups. Assigning Licenses. Multi-Factor Authentication.

MICROSOFT 365 GROUPS

Microsoft 365 Groups Overview. Collaboration in Mind. Creating Microsoft 365 Groups.

EXCHANGE ONLINE

Exchange Online Management Tools. Create and Manage Mailboxes. Using Outlook and OWA. Working with Shared and Resource Mailboxes. Distribution Groups.

MODERN SHAREPOINT ONLINE SITES

Modern Team Sites. Communication Sites. Site Templates. Setting up a Hub Site.

SHAREPOINT CONTENT MANAGEMENT

Fundamentals of Apps, Lists and Libraries. Working with the Filter and Details Pane. Working with metadata and different column types. Managing what you see with views. Finding your content with search.

ONEDRIVE FOR BUSINESS

Store Work Files in the Cloud with OneDrive for Business. Sharing Documents. Synchronize documents to your local machine.

EXTERNAL SHARING

Adding a Guest User to a Team or Group. Guest Invitations. Sharing SharePoint Sites. Sharing Documents from SharePoint or OneDrive.

MANAGING TASKS WITH PLANNER AND TODO

Organize Your Teamwork with Office 365 Planner. Get a Personal Tasks Overview with Todo.

MICROSOFT TEAMS

Microsoft Teams Feature Overview: Chat, Teams, Meetings, Phone System. Connecting a Team to an Microsoft 365 Groups. Desktop, Mobile and Web Teams Client. Teams, Channels, Tabs, Apps and Connectors. Microsoft Teams configuration options. Integrate SharePoint Online in Microsoft Teams with Tabs. Using the Lists app in Microsoft Teams. Microsoft Teams Governance and Lifecycle Management.

MICROSOFT FORMS

Get Started with Microsoft Forms. Setup for Microsoft Forms. Share form and collaborate with others. Embed your Form. Use built-in analytics to evaluate responses.

MICROSOFT POWER APPS

What is Microsoft Power Apps? Power Apps Flavours. Power Apps pricing. Creating a Power App from a template, from a data source or from blank. Adding Screens and controls to your app. Building custom SharePoint list forms with Power Apps. Adding a Power App as a webpart to a SharePoint page.

MICROSOFT POWER AUTOMATE

What is Microsoft Power Automate? Power Automate pricing. Using out-of-the-box flows in SharePoint Online. Building flows from a template. Working with approvals. Building flows from scratch: Adding triggers and actions. Running and managing flows.

03 DAYS

UTEAMSD

07 - 09 February 2022
11 - 13 April 2022
27 - 29 June 2022
19 - 21 September 2022

LEARNING GOALS
This course shows students the options for extending and customizing the Microsoft Teams experience. Learn how Apps built on the Microsoft Teams platform can be bridge the Teams client with your services and workflows. See how to create rich content pages to show in Tabs, enrich messages with Extensions, provide interaction with Bots and connect with Microsoft Teams to publish or read Card content from chats and channels.

TARGET AUDIENCE
Developers with .NET or JavaScript experience with a need to customize Microsoft Teams.

DEVELOPING FOR MICROSOFT TEAMS

MICROSOFT TEAMS DEVELOPMENT OVERVIEW
Teams Development introduction. Creating Microsoft Teams Apps with Node and .NET. Yeoman Generator for Microsoft Teams. Microsoft Teams Toolkit for Visual Studio Code. App elements: Tabs, Bots, Connectors, Messaging Extensions. Using Teams App Studio.

CREATING EMBEDDED EXPERIENCES WITH TABS
Channel/Group vs Personal tabs. Building Tabs using ASP.NET (Core). Building Tabs using Node.js and React. Interact with Teams using the Teams JavaScript SDK. Building Tabs using SharePoint Framework (SPFx). Embedded experiences with Power Apps in a Teams Tab. Authentication options for your Teams Tabs.

STYLE TEAMS APP CONTENT USING FLUENT UI
Using Fluent UI. Styling your apps with Fluent UI framework. Integrating Fluent UI components.

CARDS AND TASK MODULES
Designing Teams Cards. Responding to Card actions. Create interactive workflows with Task Modules.

BUILDING RICH CONVERSATIONS WITH BOTS
Creating a bot compatible web service. Debugging your bot with the bot Emulator. Turns, Messages and Activities. Conversations and Channels. Registering your bot with Microsoft Azure's Bot Framework.

BOTS FOR MICROSOFT TEAMS
Creating a bot for Teams. Registering your bot with App Studio. Adding bot capabilities in the app manifest. Creating simple bots with Power Virtual Agents.

ENRICH MESSAGES WITH MESSAGING EXTENSIONS
Request user input with Action Commands and Tasks. Provide search results based on Search Commands. Enrich URL rendering with Link Unfurling.

MICROSOFT GRAPH
Microsoft Graph API. Discovering the different APIs: Mail, Contacts, Calendar, People, Teams... Microsoft Graph SDK.

WEBHOOKS AND CONNECTORS
Basic webhook concepts. Receive updates from a channel with an outgoing webhook. Publish card content to a channel in Teams using incoming webhooks. Use Office 365 Connectors to publish content to Teams or Outlook.

DEPLOYING TEAMS APPS
Creating a Teams App Manifest. Composing a Teams App Package. Using App Studio for Microsoft Teams. Testing and Debugging your Teams app. Deploying directly or through an app catalog. Adding your app to AppSource.

TEAMS ADMINISTRATION OPTIONS
Teams admin center. Configuring App Setup Policies. Configuring Settings for Apps, bots & Connectors. Managing Teams with PowerShell. Managing Teams with the Office365 CLI.

05 DAYS

USPOAP

13 - 17 December 2021
28 February - 04 March 2022
25 - 29 April 2022
20 - 24 June 2022
05 - 09 September 2022

LEARNING GOALS
The future is now! Long gone are the days that developing for SharePoint only meant writing server-side ASP.NET code running on SharePoint Server. We have new, modern ways to develop for the SharePoint platform, Teams and other parts of Office 365, following the general industry tendency towards more client-side development. This course sets you up with the needed knowledge and best practices guidance on the tools and techniques needed to add your creations to the Office 365 ecosystem: going from Add-ins and the client-side object model, to remote scripting and PnP, to SharePoint Framework and Fluent UI framework.

TARGET AUDIENCE
This training is targeted at developers that want to use modern development techniques in their customizations for SharePoint, Teams and Office 365. No prior development knowledge on SharePoint is required. Being familiar with .NET and JavaScript is strongly advised, as well as having user-experience with SharePoint. The training is also targeting existing SharePoint developers that have been using the classic solution development approach and now want to get started with more modern techniques.

MODERN DEVELOPMENT WITH SHAREPOINT ONLINE AND OFFICE 365

INTRODUCTION TO SHAREPOINT AND O365 DEVELOPMENT
Office 365 Overview. SharePoint On-Premise vs SharePoint Online development options. The modern development environment.

CLIENT SIDE DEVELOPMENT USING CSOM
Getting started with CSOM. Authentication with CSOM. Consuming SharePoint data. Code efficiency with CSOM. Additional libraries. Administering your tenant with CSOM.

REST AND ODATA
Authentication with REST APIs. OData querying syntax. Batch processing. The need for digest tokens.

JAVASCRIPT CLIENT SIDE DEVELOPMENT
JavaScript embedding options. JavaScript Object Model (JSOM) library. Using the REST APIs. The Cross-domain library. The PnPJS library.

INTRODUCTION TO SHAREPOINT ADD-INS
SharePoint add-in hosting options. Visual Studio Project Templates. The anatomy of the project. SharePoint Add-in Packages. Declaritively provisioning artifacts. Creating Custom Actions & Add-in parts.

SHAREPOINT ADD-IN AUTHENTICATION
User versus add-in authentication in SharePoint. OAuth 2.0 and the SharePoint authentication flow: Context Tokens, Refresh Tokens and Access Tokens. Server to Server High Trust Authentication. Requesting and granting permissions. Delegated versus app-only authentication.

DEPLOYING YOUR SHAREPOINT ADD-INS
Application registration. Corporate App Catalog. Client IDs and Client Secrets. Publishing the remote parts. Publishing the SharePoint add-in package.

THE FLUENT UI FRAMEWORK
Branding your applications with Fluent UI Framework. Using the Fluent UI styles. Integrating Fluent UI components.

INTRODUCTION TO PNP
What is PnP? Using the PnP Core in your applications. Simplifying authentication using the PnP IdentityModel. Reusable solutions for SharePoint On-Prem and Online with the Partner Pack. Using the PnP PowerShell CmdLets.

REMOTE PROVISIONING AND REMOTE TIMERJOBS
Why do we need (remote) provisioning? Using JSON site designs. The PnP provisioning engine. Building remote timerjobs.

SHAREPOINT AND OFFICE 365 WEBHOOKS
Webhook subscriptions and event notifications. Using SharePoint Webhooks. Using Office 365 Webhooks. Debugging Webhooks.

INTRODUCTION TO SHAREPOINT FRAMEWORK
SharePoint Framework overview. SPFx toolset: Yeoman, npm, gulp, Typescript and React. On-Prem vs Online. SPFx Roadmap.

BUILDING CLIENT-SIDE WEB PARTS
Client-side web part fundamentals. SPFx Project Structure. Adding multiple web parts to a project. Full Page Apps.

MICROSOFT IDENTITY PLATFORM
Microsoft Identity Platform overview. Registering your apps. OAuth authentication flows. User authentication with Microsoft Identity Platform. Application authentication with Microsoft Identity Platform. Microsoft Authentication Libraries (MSAL).

MICROSOFT GRAPH
The Microsoft Graph API. Discovering the different APIs: Mail, Contacts, Calendar, People, Mail, Teams,... The Microsoft Graph SDK. Graph webhooks. Extending the Graph with extensions.

AZURE UTILITIES
Relaying messages with Azure Queue-storage. Delegate functionalities to Azure Functions. Application Insights.

MICROSOFT TEAMS DEVELOPMENT OVERVIEW
Teams Development introduction. Creating Microsoft Teams Apps with Node and .NET. Using existing App Templates. Yeoman Generator for Microsoft Teams. Microsoft Teams Toolkit for Visual Studio Code. App elements: Tabs, Bots, Connectors, Message Extensions.

BUILDING RICH TEAMS CONVERSATIONS WITH BOTS
Creating a bot compatible web service. Debugging your bot with the bot Emulator. Turns, Messages and Activities. Conversations and Channels. Registering your bot with Microsoft Azure's Bot Framework. Building a simple bot using the Power Virtual Agent tools.

ENRICH MESSAGES WITH MESSAGING EXTENSIONS
Request user input with Action Commands and Tasks. Search Commands. Enrich URL rendering with Link Unfurling.

TEAMS ADMINISTRATION OPTIONS
Teams admin center. Configuring App Setup Policies. Configuring Settings for Apps, bots & Connectors. Managing Teams with PowerShell. Managing Teams with the Office365 CLI.

05 DAYS

DEVELOPING WITH THE SHAREPOINT FRAMEWORK

USPFX

06 - 10 December 2021
14 - 18 February 2022
09 - 13 May 2022
04 - 08 July 2022
12 - 16 September 2022

LEARNING GOALS

SharePoint Framework or SPFx is a client-side development model that allows us to create modern SharePoint experiences using modern web parts and UI extensions. SPFx is available for SharePoint Online, 2019 and 2016. Development is done through open-source tools and using common web development techniques making it easier for web developers to start developing for SharePoint.
This course will teach you all the skills you need to start customizing the modern SharePoint experience.

TARGET AUDIENCE

Participants in this training ideally have a few years of development experience. No TypeScript or JavaScript experience is required. Knowing your way around Share-Point Online is advised.

PART 1 - BUILDING SHAREPOINT FRAMEWORK COMPONENTS

WHAT IS SHAREPOINT FRAMEWORK
SharePoint Framework overview. SharePoint Framework tools. On-Prem vs Online.

PREPARING YOUR MACHINE FOR THE SHAREPOINT FRAMEWORK
Visual Studio Code. Node.js/NPM - local hosting and module management. Yeoman - project scaffolding. Gulp - task runner. Webpack - bundling tool.

NODE MODULES
Npm modules. Versioning. Dependencies and types. Typescript intellisense with declaration files.

BUILDING CLIENT-SIDE WEB PARTS
Client-side web parts fundamentals. Web Part Project Structure. Adding multiple web parts to a project. Full Page Apps.

STRONGLY TYPED JAVASCRIPT WITH TYPESCRIPT
Overview of the TypeScript language. The ECMAScript standard. Why use TypeScript as a SharePoint developer? Typescript transpilation and configuration. Variables, Objects, Interfaces, Classes and more. Base classes and inheritance features. Namespaces and Modules.

WEB PART PROPERTIES
Extending the web part property pane. Validating web part properties. Using custom controls in the property pane. Property pane life cycle. Storing web part data.

LOADING SHAREPOINT DATA IN SHAREPOINT FRAMEWORK
Working with OData REST Services. Discovering the SharePoint REST endpoints. Using the built-in SharePoint client to get data. Adding or updating data from client-side code. Using PNP/JS to fetch data. Using list subscriptions to receive updates from a list/library (webhooks).

LOADING OTHER FRAMEWORKS
Loading jQuery and plugins. Using Angular and Angular Elements. Loading packages from a CDN. Bundling and Externals.

SPFX PROJECT ARCHITECTURE
General project structure strategies. Shared code using the library component. Creating your own npm packages.

DEPLOYMENT OVERVIEW
What is an app catalog and how do we create it? Deploying your bundle and package. Versioning in SPFx. Deploying SharePoint Assets like Lists, Content Types and more. Deploying Extensions. Tenant-wide, Site Collection or Site specific deployments. Deploying to Microsoft Teams.

PART 2 - WORKING WITH REACT AND OTHER LIBRARIES

USING AND BUILDING REACT COMPONENTS FOR THE SHAREPOINT FRAMEWORK
React App Structure. What is JSX. JavaScript Expressions. JSX Tips and Tricks. Building your first component.

REACT COMPONENTS DEEP-DIVE
Working with multiple components. Transferring Props. Dynamic data with component state. Form Components. Component Lifecycle. Loading Data into a component. React Virtual DOM.

BRAND YOUR CLIENT WEB PARTS WITH SASS AND OFFICE-UI-FABRIC
SASS, the dynamic stylesheet language. SASS Variables, Mixins, Nesting, functions, ... SASS Preprocessing. Office UI Fabric styles. Office UI Fabric components. Fluid Framework preview.

CONNECTING TO MICROSOFT GRAPH
Microsoft Graph API. The Graph API Client. Consuming Microsoft Graph. Registering and approving permissions to access Microsoft Graph. Domain Isolated Web Parts.

CONSUMING AZUREAD PROTECTED APIS
Using the AadHttpClient. Azure AD applications. Setting permissions. Calling Azure AD protected resources.

CALL SHAREPOINT THROUGH YOUR OWN API
Make secure calls into SharePoint using your own API. Elevated privileges with App Only. Pick a technology: .NET/JAVA/Azure Funtions...

PART 3 - SHAREPOINT FRAMEWORK EXTENSIONS

APPLICATION CUSTOMIZER
Creating an application customizer. Using dialogs and alerts. Injecting controls into modern page placeholders.

FIELD CUSTOMIZER
Creating a Field Customizer. Using field data. Injecting React controls into your field customizer.

COMMAND SET
Creating a Command Set. Executing scripts when a button is clicked. Show your button conditionally based on item selection, location, etc.

SEARCH EXTENSION
Creating a Search Extension. Manipulating the search results.

VIVA CONNECTIONS EXTENSIBILITY - BETA
Build Adaptive Card Extensions. Advanced Card Configuration. Quick Views. Viva and Teams.

OFFICE ADD-INS
Building an Outlook plugin. Interacting with e-mail content.

PART 4 - ADVANCED DEVELOPMENT

DYNAMIC DATA
Writing a data provider. Writing a data consumer. Data serialization. Handling data updates.

UNIT TESTING
Creating unit tests for your typescript code using Enzyme, Sinon, Chai, ... Running tests using Karma. Running tests with Jest.

TIPS AND TRICKS
Debugging with Visual Studio Code. Logging with Azure Application Insights. Extending the build process with your own Gulp tasks. Taking control over your bundles with WebPack configuration.

CONFIGURING AND ADMINISTERING OFFICE 365

U0365A

17 - 20 January 2022
21 - 24 March 2022
02 - 05 May 2022
13 - 16 June 2022
12 - 15 September 2022

LEARNING GOALS

Office 365 contains a broad range of services that work well together. This training targets all the key components of Microsoft Office 365, with a focus on the technical services Azure Active Directory, Exchange Online, SharePoint Online and Microsoft Teams. In this training you will become familiar with the different subscription models for Office 365. You will learn how to configure and manage the services both with the different Admin Portals and with PowerShell.

TARGET AUDIENCE

This course is designed for experienced IT Professionals, IT Decision Makers, Administrators, ... who will be responsible for configuring and managing an Office 365 environment.

UNDERSTANDING OFFICE 365
Introduction to Microsoft 365. Key Office 365 Features. Office 365 Security & Privacy.

MICROSOFT CLOUD OFFERINGS
Azure Active Directory. Office 365. Intune. Security. Azure Information Protection. Enterprise Mobility and Security. Microsoft 365.

MANAGING OFFICE 365
Managing Clients. Deploying Microsoft 365 Apps. Microsoft 365 Admin Center. Connecting to Office 365 with PowerShell and/or Office365 CLI.

AZURE ACTIVE DIRECTORY
Azure AD Overview. Azure AD Editions. Add your domain to Azure AD. User and Group Management. Managing AzureAD objects with PowerShell. Azure AD Security Roles. Azure AD Business to Business.

AZURE ACTIVE DIRECTORY SIGN-IN OPTIONS
Azure AD Connect. Directory Synchronization. Password Synchronization. Pass-Through Authentication. Federation.

EXCHANGE ONLINE
Exchange Online Feature Overview. Management Tools. Role-based Access Control. Creating and Managing Recipients. Working with Address Lists. Exchange Online Archiving. Exchange Online Transport Rules.

MICROSOFT 365 GROUPS
Microsoft 365 Groups Overview. Creating Microsoft 365 Groups. Microsoft 365 Group Connectors. Microsoft 365 Groups Administration.

MICROSOFT TEAMS
Microsoft Teams Feature Overview. Teams Clients. Teams Admin Tools. Teams Policies. Communication Services: Presence, Chat, Audio/Video. Meetings and Live Events. Cloud Voice: Phone System, Call Queues, Dial Plans. Collaboration Services: Teams, Channels, Tabs, Apps and Connectors. External Access and Guest Users.

SHAREPOINT ONLINE ARCHITECTURE
Modern SharePoint Team Sites and Communication Sites. Connecting Environments with Hub Sites. Self Service Site Creation Governance. Building Modern Collaboration & Intranet Environments. SharePoint Lists and Libraries.

SHAREPOINT ONLINE ADMINISTRATION
External Access. SharePoint Migration Tool. Content Services: Term Store, Content Type Gallery. SharePoint Modern Search.

MICROSOFT 365 SECURITY
Microsoft Defender for Office 365. Anti-malware Protection. Anti-spam Protection. Anti-phishing and Anti-spoofing. Email Authentication: SPF, DKIM and DMARC. Attack Simulator. Safe Attachments and Safe Links. Threat Protection for Collaboration. Threat Protection Reports and Secure Score.

MICROSOFT 365 COMPLIANCE
Information Protection: Sensitivity Labels and Data Loss Prevention. Information Governance: Retention Policies. eDiscovery. Auditing and Alert Policies. Compliance Score.

MICROSOFT ENDPOINT MANAGER: CONFIGURING DEVICES WITH MICROSOFT INTUNE

UINT

13 - 15 December 2021
14 - 16 February 2022
28 - 30 March 2022
01 - 03 June 2022
11 - 13 July 2022
19 - 21 September 2022

LEARNING GOALS

Microsoft Endpoint Manager is a single, integrated endpoint management platform for all your endpoints. It integrates Configuration Manager and Microsoft Intune. This course focuses on Intune: a cloud-based service in the enterprise mobility management (EMM) space that helps enable your workforce to be productive while keeping your corporate data protected.

TARGET AUDIENCE

This course is intended for IT professional technical specialists responsible for managing devices in the cloud.

INTUNE OVERVIEW
Intune Subscriptions. Intune Management. Mobile Device Management (MDM). Mobile App Management (MAM). Azure Active Directory. Role-Based Administratif Control (RBAC).

DEVICE ENROLLMENT
Device Enrollment. Device Management Capabilities. Enrollment Options. Windows Enrollment. Android Enrollment. iOS Enrollment.

DEVICE CONFIGURATION
Configure Device Profiles. Configure Device Features. Configure Device Restrictions. Configure Settings: Email, VPN, Wi-Fi. Administrative Templates. Upgrade Editions. Kiosk Devices.

APP MANAGEMENT
App Lifecycle. Add apps to Intune: Store Apps - Office 365 - Web Apps - LOB Apps - Win32 Apps - PowerShell Scripts. Monitor Apps. App Configuration Policies.

DEVICE AND APP PROTECTION
Device Compliance Policies. App Protection Policies. Windows Information Protection. Conditional Access.

ENDPOINT PROTECTION
Endpoint Protection. Microsoft Defender for Endpoint. Integration between Intune and Defender for Endpoint. Enforce Compliance with Conditional Access. Remediate Vulnerabilities.

DEVICE MANAGEMENT
Lock, Restart or Remove Device. Locate Lost Device. Logout or Remove User. Bypass Activation Lock. Reset Passcode. Remote Control Mobile Devices. Synchronize Device.

KIOSK DEVICES
Windows 10 Kiosk Devices. Android Kiosk Devices. iOS Kiosk Devices.

WINDOWS AUTOPILOT
Windows Autopilot Overview. Windows Autopilot Requirements. Deployment Scenarios. Administering Windows Autopilot.

03 DAYS

MS-700

21 - 23 February 2022
02 - 04 May 2022
04 - 06 July 2022
19 - 21 September 2022

LEARNING GOALS
The Managing Microsoft Teams course is designed for persons who are aspiring to the Microsoft 365 Teams Admin role. Microsoft Teams admins configure, deploy, and manage Office 365 workloads for Microsoft Teams that focus on efficient and effective collaboration and communication in an enterprise environment.

TARGET AUDIENCE
Students in this course are interested in Microsoft Teams or in passing the Microsoft Teams Administrator Associate certification exam.

MANAGING MICROSOFT TEAMS

MICROSOFT TEAMS OVERVIEW
Overview of Microsoft Teams. Overview of security and compliance in Microsoft Teams. Overview of managing Microsoft Teams.

IMPLEMENT MICROSOFT TEAMS GOVERNANCE, SECURITY AND COMPLIANCE
Implement Governance and Lifecycle Management for Microsoft Teams. Implementing Security for Microsoft Teams. Implementing Compliance for Microsoft Teams.

PREPARE THE ENVIRONMENT FOR A MICROSOFT TEAMS DEPLOYMENT
Upgrade from Skype for Business to Microsoft Teams. Plan and configure network settings for Microsoft Teams. Deploy and Manage Microsoft Teams endpoints.

DEPLOY AND MANAGE TEAMS
Create and manage teams. Manage membership. Manage access for external users.

MANAGE COLLABORATION IN MICROSOFT TEAMS
Manage chat and collaboration experiences. Manage settings for Teams apps.

MANAGE COMMUNICATION IN MICROSOFT TEAMS
Manage Live event and meetings experiences. Manage phone numbers. Manage Phone System for Microsoft Teams. Troubleshot audio, video, and client issues.

03 DAYS
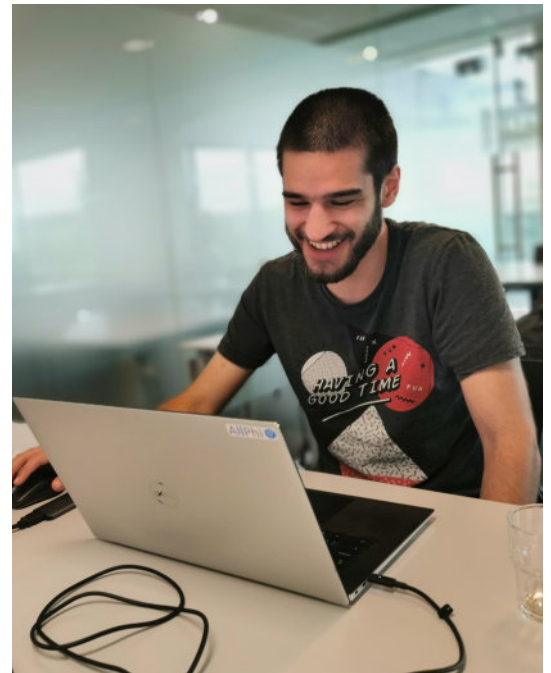
UMSEC

02 - 04 February 2022
13 - 15 April 2022
15 - 17 June 2022
31 August - 02 September 2022

LEARNING GOALS
To support organizations in protecting themselves from several kinds of attacks, Microsoft offers a broad range of cloud security services. This 3-day training will make you familiar with the following services: Microsoft Defender for Endpoint, Microsoft Defender for Office 365, Microsoft Defender for Identity and Microsoft Defender for Cloud Apps. These tools will help you to protect and secure your identities, your devices, your apps and your information in Microsoft 365.

Companies need to comply with various rules and regulations. Microsoft 365 can help you to achieve information protection and governance by implementing data-loss prevention policies, sensitivity and retention labels and eDiscovery.

TARGET AUDIENCE
This course is intended for IT professional specialists responsible for securing and governing the cloud IT environment.

MICROSOFT 365 CLOUD SECURITY

CLOUD SECURITY OVERVIEW
Threat Landscape. Common Threats and Attack Types. The Defender's Dilemma. Identity and Access Management. Threat Protection. Security Management. Information Protection.

SECURING YOUR IDENTITIES
Multi-Factor Authentication. Privileged Identity Management. Identity Protection. Conditional Access. Microsoft Defender for Identity.

MICROSOFT DEFENDER FOR IDENTITY
Microsoft Defender for Identity Features. Configuring Defender for Identity. Protecting Your Accounts.

MICROSOFT DEFENDER FOR OFFICE 365
Protect Against Malware, Spam, Phishing, Spoofing. Email Authentication: SPF, DKIM and DMARC. Attack Simulator. Safe Attachments and Safe Links. Threat Protection for Collaboration: SharePoint, OneDrive and Teams. Secure Score.

MICROSOFT DEFENDER FOR ENDPOINT
Protect Your Devices. Onboarding Devices. Endpoint Detection and Response. Threat and Vulnerability Management. Secure Score for Devices.

MICROSOFT DEFENDER FOR CLOUD APPS
Cloud Discovery. App Connectors. Control Access to Apps with Policies. Conditional Access App Control. Protect Sensitive Information.

DETECT AND STOP ATTACKS WITH MICROSOFT 365 DEFENDER
Protect Your Environment. Onboard Security Services. Attack Investigation. Threat Hunting.

MICROSOFT 365 COMPLIANCE
Information Protection: Sensitivity Labels and Data Loss Prevention. Information Governance: Retention Policies. eDiscovery. Auditing and Alert Policies. Compliance Score.

BUILDING MODEL-DRIVEN APPS ON THE POWER PLATFORM & DYNAMICS 365

LEARNING GOALS
Built on the fundamentals of Dynamics 365, Model-Driven Apps allow you to build complex and sophisticated business apps without writing code. Model-driven apps follow a data-first approach. You first design the data model of your model-driven app using Microsoft Dataverse and then you compose the UI of the model-driven app. Unlike canvas app development where the designer has complete control over app layout, with model-driven apps much of the layout is determined for you and largely designated by the components you add to the app.

TARGET AUDIENCE
This 5-day course is intended for power users, consultants and key business users that want to work with and customize the out-of-the-box functionality of the Power Platform.

INTRODUCTION TO THE MICROSOFT POWER PLATFORM
The past. From Dynamics CRM to Dynamics 365 for Customer Engagement, The Common Data Model and Model-Driven Apps. Overview of the Microsoft Power Platform. Introduction to Microsoft Dataverse. The Common Data Model. Dynamics 365 Sales, Customer Services, ... as model-driven apps on Microsoft Dataverse.

OVERVIEW OF MODEL-DRIVEN APPS/DYNAMICS 365
Creating and working with environments. The relationship between environments and Microsoft Dataverse. Navigating and using a model-driven app.

WORKING WITH SOLUTIONS
Introduction to customizing Model-Driven Apps. Working with Publishers and Solutions. Difference between Managed and Unmanaged Solutions. Adding components to your solutions. Working with managed properties. Importing and Exporting Solutions. Versioning solutions.

CREATING MODEL-DRIVEN APPS
Concepts of a model-driven app. The structure of a Site Map. Creating a Site Map for an app. Creating apps with the App Designer. Navigating between apps. Managing apps in Solutions. Preview: the modern app designer. Introducing XrmToolBox.

CREATING AND CUSTOMIZING TABLES
Creating and configuring tables in Microsoft Dataverse. The default table columns. Creating custom Activity Tables.

MANAGING RELATIONSHIPS
Plan, create, and configure Table Relationships. Creating and using relationships - 1:N, N:N. Connections and Connection Roles. Defining self-referential relationships. Defining hierarchy visualizations. Creating polymorphic or multi-table relationships.

CREATING AND CUSTOMIZING COLUMNS
Adding custom Columns to Tables. Supported column data types. Working with File and Image data types. Working with Lookup. Preview: creating multi-table or polymorphic Lookups. The Choice and Choices data types. Using the Status and Status Reason columns Defining Alternate Keys for a Table. Importing rows in tables using Dataflows. Aggregating data with Rollup Columns. Calculate data based on other column with Calculated Columns.

CUSTOMIZING FORMS
Define the structure. How to add, remove or modify the components using the Form Designer. Placing image column. Configure and use Quick Create, Quick View and Card Forms. Working with custom components. Embedding Canvas apps in a Form.

BUSINESS RULES
How to create and apply Business Rules. Defining the scope of Business Rules. Business Rules limitations.

CREATING AND USING VIEWS
Different types of system, public and personal Views. Create and modify Views. Configure quick find, advanced find and associated Views. Configure views with custom controls like the Editable grid, calendar Control...

REPORTING IN MODEL-DRIVEN APPS
Build Interactive Charts to show in Views or on Dashboards. Classic Dashboards showing Charts, Data or web pages. Interactive Dashboards with dynamic sorting and filtering. Working with the Tabular Data Stream (TDS) endpoint. Using Power BI Desktop with data stored in Microsoft Dataverse. Creating embedded Power BI Dashboards. Embedding a Power BI report in a Table Form.

SECURING MODEL-DRIVEN APPS
Building a Security Model. Business Units and their role in security modeling. Define Privileges and access levels in Security Roles. Creating and maintaining users. Team management.

POWER PLATFORM AUTOMATION
Overview. Trigger a Flow based on a create, update or delete of an table row. Consuming Microsoft Dataverse data inside Power Automate. Schedule a Flow. Modern Approval with Power Automate.

INTRODUCING POWER APPS PORTALS
Creating a Power Apps Portal. Creating a web page in Portals Studio. Adding an entity list to a portal web page. Adding an entity form to a portal web page.

BUILDING POWER APPS PORTALS

LEARNING GOALS
This training will teach App Makers the necessary skills to create a Power Apps Portal. The main goal of a Power Apps portal is to build low-code external-facing web site that exposes Microsoft Dataverse data with external customers and partners. External users can either access your Dataverse data anonymously or through commercial authentication providers like Azure AD B2C, Facebook, Google,...

TARGET AUDIENCE
This 2-day course is intended for app makers, consultants that need to build Power Apps Portals. Students need a basic understanding of the Power Apps platform.

INTRODUCTION TO POWER APPS PORTALS
Overview of the Power Platform. Introducing Microsoft Dataverse. Using the Power Platform Admin Center. Using the Power Apps Maker Portal/li>. Creating a Portal from blank. Creating a Portal from a template. Power Apps Portals licensing. Power Apps Portals and Dynamics 365.

GETTING STARTED WITH POWER APPS PORTALS
Overview of a Power App Portal. lifecycle of a Portals. Understanding Power Apps Portals Studio. Authoring basic content in Power Apps Portals Studio. Overview of the Portal Management app. Managing a portal in the Portal Management app. Configuring Portal settings. Browsing and editing a portal. Deleting portals. Using XrmToolBox with portal apps/li>. LAB: Browsing and understanding a Portal.

AUTHORING BASIC PORTAL CONTENT
Creating Web Pages. Adding Sections. Adding text, images, breadcrumbs, custom menus,... Working with Templates. working with Themes and CSS. Using the code editor. Embedding Power BI Reports and Dashboards. Configuring the Portal Navigation.

AUTHORING ADVANCED PORTAL CONTENT
Working with Lists. Working with basic and advanced Forms. Creating Templates. Configuring Web Files. Configuring Content Snippets. Configuring Web Pages and Links. An introduction to the Liquid templating language.

CONFIGURING PORTAL SECURITY
Portal Authentication overview. Configure Portal authentication with Azure AD, Facebook,... Configure contacts. Invite contacts. Creating Web Roles. Configure table permissions. Manage page permissions. Create website access permissions.

POWER PLATFORM & DYNAMICS 365

DEVELOPING FOR THE POWER PLATFORM WITH MICROSOFT DATAVERSE

05 DAYS

UCDSD

21 - 25 February 2022
09 - 13 May 2022
04 - 08 July 2022
12 - 13 September 2022

LEARNING GOALS

This course will teach developers how they can extend Microsoft Dataverse and Model-driven apps with custom code.

Although Microsoft Dataverse and Model-driven apps have quite some out of the box customization options, many companies have requirements which can only be met by extending the existing feature set of Microsoft Dataverse. This course is specifically designed to help .NET and JavaScript developers learn the various development features of Microsoft Dataverse and Model-driven apps. And since most Dynamics 365 Apps like Sales, Services, Marketing, ... are just model-driven build using Microsoft Dataverse, this training also applies to developers who would like to extend their Dynamics 365 Apps with custom code.

TARGET AUDIENCE

This course is targeting developers who have none or very limited development skills with the Power Platform and Model-driven apps or Dynamics 365. Before attending the course, delegates must have the following prerequisite knowledge and experience:

Basic understanding of Web development and design.
Knowledge of a .NET programming language (Visual Basic .NET or C#) and JavaScript.
Working knowledge of Model-driven apps and the Power Platform (power-user perspective).

EXTENSIBILITY OVERVIEW

Introduction to Dataverse. Overview of the Dataverse extensibility model. overview of the Power Platform SDKs that are available from Microsoft via NuGet. Introducing XrmToolBox.

WORKING WITH THE DATAVERSE WEB API

Introduction to the Dataverse Web API. Registering client applications with Azure Active Directory. Authenticate with the Dataverse Web API using OAuth 2.0 and MSAL/ADAL. Performing a simple Create operation using the Dataverse Web API. Composing HTTP requests and error handling. Dataverse Web API URL and versions The different HTTP methods and headers. Executing your first HTTP requests.

USING THE DATAVERSE WEB API

Query Data using the Dataverse Web API. Creating, Updating and Deleting rows in tables. Executing Actions and Functions. Executing batches. Impersonate another user using the Dataverse Web API. Detect duplicate data using the Dataverse Web API.

WORKING WITH THE MICROSOFT DATAVERSE ORGANIZATION SERVICE

What is the Organization Service endpoint in Dataverse. The IOrganizationService Interface. The OrganizationServiceProxy class. Early versus late binding when accessing table rows. An introduction to XRM Tooling and it's future in the Power Platform. Working with CrmServiceClient. Use connection strings in XRM Tooling to connect to Dataverse. Create, update, delete and retrieve table rows using XRM Tooling. Retrieving data using the QueryExpression and QueryByAttribute classes.

QUERYING MICROSOFT DATAVERSE WITH FETCHXML

Introduction to FetchXML. Writing FetchXML queries. Using XrmToolBox FetchXML Builder to create FetchXML queries. Executing FetchXML queries using the Dataverse Web API. Executing FetchXML queries using the Dataverse XRM Tooling.

PLUG-INS

Plug-in overview. Writing custom plug-ins. Register and deploy plug-ins using the Plug-In Registration Tool. Debugging plug-ins in the Dataverse. Deploying Plug-Ins with Solutions. Automate Plug-in deployment using Spkl. Using Plugin Trace Viewer in XrmToolBox.

AZURE INTEGRATIONS

Overview of the Azure integration with the Dataverse. Integration with Azure Service Bus. Configuring the Azure-aware OOB plug-in. Write a custom Azure-aware plug-in. Integration between the Dataverse and Web Hooks.

IMPLEMENTING BUSINESS PROCESSES

Creating processes. Writing custom Workflow activities. Deploying and debugging custom workflow activities. Creating Custom Actions. Using Custom Actions with the Web API. Using Custom Actions in Power Automate.

CLIENT SCRIPTING IN MODEL-DRIVEN APPS USING JAVASCRIPT

Creating JavaScript Web Resources. Handling Form/View and Field events. Root objects in the Client API object model. Working with the Client API execution context object. The Client API Form context object. Interacting with forms and attributes using the Client API object model. The Client API grid context object. The Client API Xrm object. Best practices in writing client-side Code.

CUSTOMIZING THE COMMAND BAR IN A MODEL-DRIVEN APP

Overview of the Command Bar. Available Command Bars in model-driven apps. Working with Display and Enable rules. Creating a custom Ribbon Action. Pass data or URL parameters to a Ribbon Action. Adding or removing Commands in the Command Bar. Working with URL addressable forms and views. Using Ribbon Workbench to customize the command Bar.

CREATING WEB RESOURCES

Web resources overview. Building custom HTML Web Resources. Using the Xrm.WebApi JavaScript object model to access, create and manage records.

AN INTRODUCTION TO POWER APPS COMPONENT FRAMEWORK

Install the Microsoft Power Apps CLI. Using the Microsoft Power Apps CLI. Create and build a code component. Package a code component in a Solution.

MICROSOFT POWER APPS AND POWER AUTOMATE

UPOWER

13 - 16 December 2021
21 - 24 February 2022
19 - 22 April 2022
07 - 10 June 2022
08 - 11 August 2022
26 - 29 September 2022

LEARNING GOALS
In this course, participants will get familiar with the concepts of Microsoft Power Apps and Microsoft Power Automate. They will learn how to use these services to create Canvas Apps and Flows without needing any development skills.

TARGET AUDIENCE
This course targets power users, content managers, business analysts and many more. No prior knowledge to Power Apps or Power Automate is required.

INTRODUCTION TO THE POWER PLATFORM
Overview of the Microsoft Power Platform. Power Apps, Power Automate, Power BI, Power Virtual Agents & AI Builder. Connectors and Connections overview. Microsoft Dataverse and Dynamics 365. Real world use case of the Power Platform.

POWER PLATFORM LICENSING GUIDE
Licensing Overview. What is included with existing licensing models? Standard vs Premium connectors. API Call Limits.

GETTING STARTED WITH POWER APPS
What is Power Apps? Canvas Apps vs. Model-Driven Apps vs. Power Apps Portals. Getting started with Canvas Apps using templates. Generating Canvas Apps from your data. Power Apps on mobile.

BUILDING CANVAS APPS WITH POWER APPS
Creating Canvas Apps with Power Apps Studio. Working with connections. Adding Screens and Screen Controls. Working with Galleries. Introduction to Forms.

CONNECTING WITH POPULAR DATA SOURCES
SharePoint list items and documents. Microsoft Teams Channels and Messages. Managing tasks in Outlook and Planner. Sending Emails with Outlook, GMail, ... Office 365 Users. Manipulating Excel. Microsoft Dataverse database and Dynamics 365.

FORMS IN CANVAS APPS
Customizing Edit- and Detail Forms. How do data cards work? Data card templates and customization. Input validation. Dynamic controls: use formulas to make fields required, hidden, etc.

POWER APPS DATA SOURCES AND LOCAL DATA
Configuring data sources. Using variables and collections. Data source manipulations. Manually patching data sources. Handling and preventing errors. Refreshing data and searching. Data source delegation.

CONFIGURING AND PUBLISHING POWER APPS
Configuring Power Apps. Saving, sharing and publishing Apps. Sharing and permissions. Use your Power App from SharePoint pages. Embed your Power App as a Teams app. App analytics.

CUSTOMIZING SHAREPOINT FORMS
Customizing a SharePoint form. SharePoint Integration Control. Differentiate your form based on the mode: view, edit, new. Adding dynamic behavior. Wide screen SharePoint forms.

POWER APPS COMPONENTS
Creating Components. Defining Inputs and Outputs. Using Components.

GETTING STARTED WITH POWER AUTOMATE
What is Power Automate? Flow types. Flow building blocks. Using Connections in Flows. Trigger types. Basic Actions. The Power Automate Mobile App.

BUILDING BASIC FLOWS
Building flows from Templates or from Blank. Start a flow when something happens with Automatic triggers. Start a flow with the push of a button or for a selected item with Manual triggers. Run a flow on a schedule with a Scheduled trigger. Flow action connection basics. Adding a simple condition. Monitoring Flows and fixing errors.

POWER AUTOMATE CONNECTORS AND ACTIONS
Connection credentials and configuration. Default actions overview: SharePoint, Teams, Dynamics 365, Exchange, Planner, ... Manipulating Office documents: Word, Excel. Using HTTP connectors to call APIs. Custom Connectors explained. Data Operations: Compose, CSV, JSON. Variables:string, number, array.

POWER AUTOMATE PATTERNS
Actions, Conditions, Parallelism and Loops. Advanced trigger configuration. Flow error handling: configure run after. Limits and Configuration of Flows. Handling complex scenario's by using parent-child Flows.

WORKFLOW DEFINITION LANGUAGE
Introduction to WorkFlow Definition Language. Expressions, Operators and Functions. Using Expressions in Flows.

SHARING FLOWS AND FLOW PERMISSIONS
Sharing a Flow. Co-Ownership and Team Flows. Flow permissions. Connections and credentials. Run only users and connections.

MODERN APPROVALS WITH POWER AUTOMATE
Approval with Power Automate. Approval types. Approving and Rejecting. Processing the approval outcome.

POWER AUTOMATE FOR MOBILE
Introduction to Power Automate for Mobile. Tracking Activity. Starting a Flow. Flow Management.

COMBINING POWER PLATFORM TOOLS
Start a Flow from Power Apps. Open a Power App with a push notification from Power Automate. Trigger Flows from Power BI. Embed a Power BI report into your Power App. Embed a Power App in Power BI and integrate with your data.

USING POWER APPS AND POWER AUTOMATE ON ON-PREMISES DATA
What is an on-premise data gateway? Technical overview of how a gateway works. Setting up a Gateway for on premises connections. Consuming on-premises connections in Power Apps and Power Automate.

POWER PLATFORM ADMIN CENTER
Managing Environments and Security. Environments and Solutions. Understanding Licensing & Capacity. Data Integration Overview. Admin Center reporting tools. Microsoft Dataverse and permissions. Data Policies: Blocking Connectors. Migrating Power Apps and Flow between tenants / environments. Power Automate vs Azure Logic Apps.

03 DAYS

ANALYZING YOUR DATA WITH POWER BI FOR BUSINESS USERS

UBIPBE

29 November - 01 December 2021
24 - 26 January 2022
07 - 09 March 2022
25 - 27 April 2022
07 - 09 June 2022
08 - 10 August 2022
26 - 28 September 2022

LEARNING GOALS

In this training you learn how to write queries with Power BI Desktop and Power BI Excel to collect data from databases, cubes, online Excel files... You will learn how to enrich the data model with relationships, hierarchies, DAX calculated columns and measures... And finally you will see how to create interactive reports using the large set of visualization available in Power BI Desktop and share them using PowerBI.com and Power BI Mobile apps.

TARGET AUDIENCE

This course is intended for people who have no prior knowledge of Power BI.

INTRODUCTION TO POWER BI
The need for Business Intelligence. Self-Service BI versus Enterprise BI. Core concepts of Power BI. Introducing Power BI Desktop. Introducing the Power BI Service.

CREATING QUERIES WITH POWER BI DESKTOP
Core concepts of Power Query. Creating Queries to load data. Applying basic transformations. Working with Direct Query.

ENHANCING A DATA MODEL IN POWER BI DESKTOP
Renaming columns and tables. Hiding columns and tables from the Data Model. Column data type and formatting. Working with numerical fields. Sorting data in columns. Data categorization. Creating Hierarchies in tables. Defining calculated columns and measures using DAX. Working with Quick Measures. Defining relationships between tables.

DESIGNING REPORTS IN POWER BI DESKTOP
Overview of the Report Canvas. Adding text boxes, shapes and images. Using built-in visualizations. Add style and branding through themes. Printing a Power BI Report. Creating Power BI Templates.

ENHANCING REPORTS IN POWER BI DESKTOP
Working with Slicers and Filters. Working with drill through report pages. Working with Bookmarks. Visual hierarchies and drill-down behavior. Grouping and Binning. Using Custom Visuals. Create reports that are optimized for phones. Miscellaneous features.

INTRODUCTION TO POWER BI SERVICE
What is the Power BI Service? Power BI Service pricing and features. Working with Datasets and Reports. Creating and using App Workspaces.

CREATING DATASETS AND REPORTS IN POWER BI SERVICE
Creating Datasets in the Power BI Service. DirectQuery for Power BI datasets and Azure Analysis Services. Using Quick Insights. Creating Reports in the Power BI Service. Printing Reports. Export to PowerPoint. Embedding Reports in SharePoint Online.

CREATING DASHBOARDS AND ANALYZING DATA WITH POWER BI SERVICE
Creating Dashboards. Printing Dashboards. Configuring Dashboards for Mobile Devices. Working with Power BI Q&A. Analyze in Excel. Working with goals.

SHARING CONTENT IN THE POWER BI SERVICE
Sharing Reports and Dashboards with internal and external users. Sharing content inside an App Workspace. Creating Power BI Apps. Consuming Power BI Apps. Publishing Reports to the web. Subscribing to Report updates. Embedding a report in SharePoint Online or Teams. Report usage metrics.

USING POWER BI WITH MOBILE DEVICES
Supported Platforms. Accessing Reports and Dashboards from mobile devices.

05 DAYS

ANALYZING YOUR DATA WITH POWER BI FOR BI PROFESSIONALS

UBIPB

29 November - 03 December 2021
31 January - 04 February 2022
28 March - 01 April 2022
30 May - 03 June 2022
01 - 05 August 2022

LEARNING GOALS

This course will teach you all aspects of creating Power BI Data Models and Reports and publishing and maintaining them on the Power BI online service. The course will cover technical topics on DAX and Power Query. It also explains how to configure the Data Gateway so that you can connect the Power BI online service to your on-premise data sources. We finish the training with the brand new Dataflows and and an overview on how to implement Row Level Security in Power BI.

TARGET AUDIENCE

This course is intended for technical people who have a background in Business Intelligence. U2U also offers a 3-day course Analyzing your data with Power BI for Business Users targeted at people without a technical background.

INTRODUCTION TO POWER BI
The need for Business Intelligence. Self-Service BI versus Enterprise BI. Power BI core concepts. Introducing Power BI Desktop. Introducing the Power BI Service. Power BI Service Tiers and Features.

CREATING QUERIES USING POWER BI DESKTOP
Creating Power Queries and working with Query steps. Loading data from CSV and Excel files. Loading data from relational databases. Applying basic transformations. Query Folding. Importing data, using Direct Query or using Live Connections.

WRITING ADVANCED QUERIES IN POWER BI DESKTOP
Advanced Transformations in Power Query. Appending and Merging Queries. Working with Query Parameters. Defining and using Query Functions. Managing Data Source Security.

BUILDING A DATA MODEL
Why do we need a Data Model? Authoring data models in Power BI Desktop. Controlling field formatting. Creating hierarchies inside tables. Data model storage in import mode. Analyzing storage costs using the Vertipaq Analyzer or DAX Studio.

CREATING RELATIONSHIPS
Cardinality of relationships. Handling role-playing dimensions. The Cross-Filter direction of relationships.

WORKING WITH STORAGE MODES
Importing data. Using DirectQuery. Using a Live connection. Creating aggregation tables.

DATA ANALYSIS EXPRESSIONS (DAX)
DAX introduction. Creating Calculated Columns. Creating Tables. Creating Measures. Working with CALCULATE. Time Intelligence Functions.

DESIGNING REPORTS IN POWER BI DESKTOP
Overview of the Report Canvas. Adding textboxes, shapes and images. Using built-in visualizations. Add style and branding through themes. Creating Power BI Templates.

ENHANCING REPORTS IN POWER BI DESKTOP
Working with Slicers and Filters. Working with Drill through report pages. Creating custom Tooltips. Working with Bookmarks. Visual hierarchies and drill-down behavior. Grouping and Binning data. What If Parameters. Using Custom Visuals. Create reports that are optimized for phones.

INTRODUCTION TO POWER BI SERVICE
What is the Power BI Service? Power BI Service pricing and features. Creating and using Workspaces. Working with Datasets and Reports.

CREATING DATASETS AND REPORTS IN POWER BI SERVICE
Creating Datasets in the Power BI Service. Connecting to a dataset from the service in Power BI Desktop. DirectQuery for Power BI datasets and Azure Analysis Services. Using Quick Insights. Creating Reports in the Power BI Service. Printing Reports. Export to PowerPoint.

CREATING DASHBOARDS AND ANALYZING DATA WITH POWER BI SERVICE
Creating Dashboards. Printing Dashboards. Configuring Dashboards for Mobile Devices. Working with Power BI Q&A. Analyze a dataset from the service in Excel. Working with goals.

SHARING CONTENT IN THE POWER BI SERVICE
Sharing Reports and Dashboards with internal and external users. Sharing content inside a Workspace. Creating and consuming Power BI Apps. Publishing Reports to the web. Working with Report Subscriptions. Embedding a report in SharePoint online or Microsoft Teams. Report usage metrics.

WORKING WITH DATA GATEWAYS
Scheduling Dataset refreshes. The need for a Data Gateway. Installing and configuring a Data Gateway. Creating Data Sources on a Data Gateway. Configuring incremental data refreshes.

WORKING WITH DATAFLOWS
What are Dataflows? Dataflows, Entities and the Common Data Model. Creating Dataflows. Scheduling refreshes for Data Flows. Using Dataflows in Power BI Desktop. Dataflow licensing.

SECURING A DATA MODEL
Enhancing a Data Model with Row Level Security. Configuring Row Level Security. Implementing Dynamic Security. Security and Relationships.

0.3 DAYS

MASTERING DAX

UDAX

20 - 22 December 2021
14 - 16 February 2022
04 - 06 April 2022
07 - 09 June 2022
16 - 18 August 2022

LEARNING GOALS

DAX or Data Analysis Expressions is a language used in Power BI and SQL Server Analysis Services Tabular Models to define expressions and formulas. In this course you will learn how you can use DAX to create calculated columns and measures and how you can use DAX as a query language.

TARGET AUDIENCE

This course is intended for BI people who wish to enhance their tabular models in Power BI or SQL Server Analysis Services Tabular with the DAX language.

AN INTRODUCTION TO DAX

DAX use cases. Understanding calculated columns and measures. Building tables with DAX. DAX as a query language. DAX for row level security. DAX patterns.

DAX STUDIO

Introducing DAX Studio. Installing DAX Studio. Writing DAX queries: EVALUATE, ORDER BY and START AT. Constructing tables with FILTER, DISTINCT, ROW, SELECTCOLUMNS and SUMMARIZECOLUMNS. Who's eating up the resources: Querying meta-data. Performance tuning. Profiling DAX queries.

DAX EXPRESSIONS

DAX data types. Getting started with constants. Mathematical, boolean and string operators. The most important scalar functions in DAX.

CREATING DAX MEASURES

Introduction to evaluation context. The CALCULATE function and the row and filter context. Aggregation functions. Defining table scopes. Using ALL and VALUES.

USING CALCULATE FOR TIME INTELLIGENCE

Creating calendar tables using CALENDAR and CALENDARAUTO. Working with multiple data tables. Mark as Data Table. Computing YTD/QTD and MTD totals. Comparing data over time using DAX. Calculating Rolling Totals. Calculating Moving Averages.

WORKING WITH CALCULATION GROUPS

The need for calculation groups. Creating calculation groups. Format strings in calculation groups. Excluding measures from calculation items.

MORE ON MEASURES: ITERATORS

SUMX aggregation function. Linking to different tables with RELATED. More iterators: RANKX, CONCATENATEX, ... Using variables in DAX. Context transition.

INSPECTING AND CONTROLLING THE EXECUTION CONTEXT

Why do we need the context? HASONEVALUE. ISFILTERED. ISCROSSFILTERED. ISINSCOPE. SELECTEDVALUE. ALLSELECTED. Handling hierarchies in DAX. Calculate ratio's to a parent subtotals. Raising errors in DAX.

ADVANCED DAX CONSTRUCTS

CALCULATE modifiers USERELATIONSHIP, CROSSFILTER, ... Expanded tables. CALCULATETABLE. Calculating cumulative percentages - pareto analysis. ABC analysis. Calculating customer churn - new customer, lost customers.

0.3 DAYS

MANAGING A POWER BI ENVIRONMENT

UPBIM

13 - 15 December 2021
21 - 23 February 2022
25 - 27 April 2022
20 - 22 June 2022
16 - 18 August 2022

LEARNING GOALS

Power BI is a suite of business analytics tools to analyze data and share insights. This training shows you how to setup and manage Power BI in a enterprise business environment. It focusses on the challenges that might appear when a large group of people need to develop and access the Power BI infrastructure: How to do versioning? How to check data lineage? How to control the tenant settings? How to setup security? ....

TARGET AUDIENCE

BI and IT professionals responsible for an enterprise deployment and management of Power BI solutions in the cloud. Participants are expected to have some experience with Power BI Desktop.

CONFIGURING WORKSPACES

Creating workspaces. Set a Workspace OneDrive. Shared versus dedicated capacity. Workspace connectivity with the XMLA endpoint. Configuring Azure Data Lake Gen 2 integration. Automating Workspace creation using PowerShell. Creating and working with Service principals. Power BI Governance.

MANAGING DATASETS

Working with datasets in the Power BI Service. Versioning using the open-source ALM Toolkit. Versioning and ALM using Visual Studio with Analysis Services projects. Working with shared datasets. Dataset Lineage. Certifying and promoting datasets. Automating Dataset deployment using PowerShell.

DEPLOYING CONTENT USING DEPLOYMENT PIPELINES

The need for different workspaces. Using Deployment Pipelines.

CONFIGURING WORKSPACE SECURITY

Configuring Workspace security. Security when sharing Dashboards and Reports. Securing data at rest. Securing data in transit.

REFRESHING DATASETS

Data Gateways. Standard versus Personal mode. Import versus DirectQuery versus live connections. Configuring Data Refresh Credentials. Gateway clusters. Monitoring Gateways and data refresh. Configuring incremental refresh. Incremental refreshes and partitioning. Dataset refresh using the XMLA endpoint.

WORKING WITH DATAFLOWS

What are Dataflows? Dataflows, Entities and the Common Data Model (CDM). Dataflows and Azure Data Lake Gen 2 storage. Creating Dataflows. Working with linked and computed Entities. Scheduling refreshes for Dataflows. Using Dataflows in Power BI Desktop. Consuming and creating dataflows using Azure Synapse, Azure Databricks and Azure ML. Dataflow licensing.

ADMINISTERING A POWER BI TENANT

Configuring tenant settings. Sharing settings. Custom visuals settings. Managing custom data sources.

MONITORING POWER BI

Monitor Power BI via reports. Monitoring workspace usage. Customizing workspace usage reporting. Power BI Premium Capacity Metrics and Alerts. Integrated Unified Office 365 Audit Logging.

DEVELOPING FOR THE POWER BI PLATFORM

03 DAYS

UBIPBD

20 -22 December 2021
28 February - 02 March 2022
09 - 11 May 2022
29 - 31 August 2022

LEARNING GOALS

Developing for the Power BI platform is an intensive 3-day training targeted at developers. In this course, participants will learn how to develop custom applications on top of Power BI.

TARGET AUDIENCE

This course is intended for developers who would like to develop custom applications for the Power BI platform. Participants should have a basic understanding of Power BI Desktop and the Power BI Service. Students should also have previous programming experience with .NET and/or JavaScript in Visual Studio.

INTRODUCTION TO POWER BI DEVELOPMENT

Overview of Power BI Desktop and Power BI Service. How can developers extend Power BI? Introducing Power BI REST API. Overview of Power BI Embedded. Overview of developing custom Visuals.

THE POWER BI REST API

Overview of Power BI REST API. Registering applications with Azure Active Directory. Authenticate with the Power BI REST API using OAuth 2.0 and ADAL. Working with App Workspaces. Working with Datasets. Pushing rows into dataset tables. Publishing Power BI Desktop PBIX files. Configuring data sources and dataset refresh settings.

WORKING WITH STREAMING DATASETS

Introduction to streaming datasets. Different types of streaming datasets. Creating and using streaming datasets in the Power BI Service UI. Creating and using streaming datasets using the Power BI REST API. Creating streaming datasets using the Azure Stream Analytics. Building real-time dashboards.

POWER BI EMBEDDED

Overview of Power BI Embedded. Power BI Embedded licensing models. Authentication scenarios for Power BI Embedded. The Power BI Embedded JavaScript API. Embedding dashboards. Embedding reports. Embedding Tiles. Event handling on embedded reports and dashboards.

GETTING STARTED WITH DEVELOPING CUSTOM VISUALS

Installing Node.js. Working with the Node Package Manager. Installing developer certificates. Installing and using the Power BI Visual Tools (pbiviz). Creating your first Power BI custom Visual. Overview of the Power BI Visual project structure. Testing and debugging a custom
Visual. Working with external JavaScript libraries and Type Definition Files.

DEVELOPING CUSTOM POWER BI VISUALS

Overview of the Power BI custom Visual object model. Define capabilities and data view mappings. Define custom properties. How to format numbers, dates, ... in a custom Visual. Package and deploy a custom Visual.

03 DAYS

QUERYING SQL SERVER WITH TRANSACT-SQL

LEARNING GOALS
The goal of this course is to provide students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server. The course covers querying SQL Server 2019 or previous versions as wel as Azure SQL Databases..

TARGET AUDIENCE
This course is intended for SQL Server database administrators, implementers, system engineers, and developers who are responsible for writing queries but have no or very limited experience in writing T-SQL SELECT statements.

INTRODUCTION TO TRANSACT-SQL AND THE QUERYING TOOLS
Object Hierarchy. SQL Server Management Studio. Azure Data Studio. Using the graphical query builder in Management Studio. Connecting to SQL Server from Excel or Power BI. Brief history of SQL Server.

SELECT FUNDAMENTALS
Basic SELECT Statement. T-SQL Expressions. Formatting Result Sets. The CASE Statement. Fetching Data from Tables. Filtering Data. Sorting Data. Combining Multiple Result Sets: UNION, EXCEPT and INTERSECT.

AGGREGATING DATA
Using Aggregation Functions. GROUP BY Fundamentals. Filtering on Groups Using the HAVING Clause. Computing Subtotals Using the ROLLUP and CUBE Clauses.

JOINING MULTIPLE TABLES
Normalization. Using Aliases for Table Names. Inner, outer, cross and self joins. Nested Queries.

ADVANCED SELECT
Using Functions. Data Types. Conversion Between Data Types. The CROSS APPLY Statement.

MODIFYING DATA
Using Transactions. Inserting Data. Updating Data. Deleting Data. Truncating a Table.

ADVANCED QUERYING TECHNIQUES
SQL Scripts. Common table expressions. Writing recursive CTEs. Using the OVER-clause. Windowing functions. Ranking functions. Analytic functions. PIVOT and UNPIVOT statement.

VIEWS, STORED PROCEDURES AND FUNCTIONS
Introduction to Views. Introduction to Stored Procedures. Introduction to User-defined Functions. Functions and procedures.

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05 DAYS

DEVELOPING AND OPTIMIZING SQL SERVER DATABASES

LEARNING GOALS
This five-day instructor-led course provides students with the knowledge and skills to develop a Microsoft SQL Server 2019 (or earlier) database. The course focuses on teaching individuals how to use SQL Server product features and tools related to developing a database: logical table design, indexing and query plans. It also focusses on the creation of database objects including views, stored procedures, along with parameters, and functions. Other common aspects of procedure coding, such as indexes, concurrency, error handling, and triggers are also covered in this course. Also this course helps you prepare for the Exam 70-762.

TARGET AUDIENCE
The primary audience for this course is IT Professionals who want to become skilled on SQL Server 2019 (or earlier) product features and technologies for implementing a database.

INTRODUCTION TO DATABASE DEVELOPMENT
Introduction to the SQL Server Platform. SQL Server Database Development Tasks.

DESIGNING AND IMPLEMENTING TABLES
Designing Tables. Data Types. Working with Schemas. Creating and Altering Tables.

ADVANCED TABLE DESIGNS
Partitioning Data. Compressing Data. Temporal Tables.

ENSURING DATA INTEGRITY THROUGH CONSTRAINTS
Enforcing Data Integrity. Implementing Data Domain Integrity. Implementing Entity and Referential Integrity.

INTRODUCTION TO INDEXES
Core Indexing Concepts. Data Types and Indexes. Heaps, Clustered, and Nonclustered Indexes. Single Column and Composite Indexes.

DESIGNING OPTIMIZED INDEX STRATEGIES
Index Strategies. Managing Indexes. Execution Plans. The Database Engine Tuning Advisor. Query Store.

COLUMNSTORE INDEXES
Introduction to Columnstore Indexes. Creating Columnstore Indexes.

DESIGNING AND IMPLEMENTING VIEWS
Introduction to Views. Creating and Managing Views. Performance Considerations for Views.

DESIGNING AND IMPLEMENTING STORED PROCEDURES
Introduction to Stored Procedures. Working with Stored Procedures. Implementing Parameterized Stored Procedures. Controlling Execution Context.

DESIGNING AND IMPLEMENTING USER-DEFINED FUNCTIONS
Overview of Functions. Designing and Implementing Scalar Functions. Designing and Implementing Table-Valued Functions. Considerations for Implementing Functions. Alternatives to Functions.

RESPONDING TO DATA MANIPULATION VIA TRIGGERS
Designing DML Triggers. Implementing DML Triggers. Advanced Trigger Concepts.
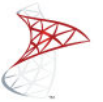
USING IN-MEMORY TABLES
Memory-Optimized Tables. Natively Compiled Stored Procedures.

SQL SERVER CONCURRENCY
Concurrency and Transactions. Locking Internals.

PERFORMANCE AND MONITORING
Extended Events. Working with extended Events. Live Query Statistics. Optimize Database File Configuration. Metrics.

05 DAYS

ADMINISTERING MICROSOFT SQL SERVER DATABASES

USQLA

17 - 21 January 2022
21 - 25 March 2022
30 May - 03 June 2022
08 - 12 August 2022

LEARNING GOALS

This course provides students with the knowledge and skills to maintain a Microsoft SQL Server 2019 or previous version.
The course focuses on teaching individuals how to use SQL Server product features and tools related to maintaining a database.

TARGET AUDIENCE

The primary audience for this course is individuals who administer and maintain SQL Server databases.

INTRODUCTION TO SQL SERVER DATABASE ADMINISTRATION
Database Administration Overview. Introduction to the SQL Server Platform. Database Management Tools and Techniques.

INSTALLING AND CONFIGURING SQL SERVER
Planning SQL Server Installation. Installing SQL Server. Post-Installation Configuration.

WORKING WITH DATABASES AND STORAGE
Introduction to Data Storage with SQL Server. Managing Storage for System Databases. Managing Storage for User Databases. Moving Database Files. Configuring the Buffer Pool Extension.

PLANNING AND IMPLEMENTING A BACKUP STRATEGY
Understanding SQL Server Recovery Models. Planning a Backup Strategy. Backing up Databases and Transaction Logs. Using Backup Options. Ensuring Backup Reliability.

RESTORING SQL SERVER DATABASES
Understanding the Restore Process. Restoring Databases. Advanced Restore Scenarios. Working with Point-in-Time Recovery.

IMPORTING AND EXPORTING DATA
Introduction to Transferring Data. Importing and Exporting Table Data. Copying or Moving a Database.

MONITORING SQL SERVER
Introduction to Monitoring SQL Server. Dynamic Management Views and Functions. Performance Monitor.

TRACING SQL SERVER ACTIVITY
Tracing SQL Server Workload Activity. Using Traces.

MANAGING SQL SERVER SECURITY
Introduction to SQL Server Security. Managing Server-Level Security. Managing Database-Level Principals. Managing Database Permissions.

AUDITING DATA ACCESS AND ENCRYPTING DATA
Auditing Data Access in SQL Server. Implementing SQL Server Audit. Encrypting Databases.

PERFORMING ONGOING DATABASE MAINTENANCE
Ensuring Database Integrity. Maintaining Indexes. Automating Routine Database Maintenance.

AUTOMATING SQL SERVER MANAGEMENT
Automating SQL Server Management. Implementing SQL Server Agent Jobs. Managing SQL Server Agent Jobs. Managing Job Step Security Contexts. Managing Jobs on Multiple Servers.

MONITORING SQL SERVER BY USING ALERTS AND NOTIFICATIONS
Monitoring SQL Server Errors. Configuring Database Mail. Configuring Operators, Alerts, and Notifications.

05 DAYS

SQL SERVER PERFORMANCE TUNING AND OPTIMIZATION

USQLOP

31 January - 04 February 2022
02 - 06 May 2022
27 June - 01 July 2022
12 - 16 September 2022

LEARNING GOALS

The 5 day class offers a comprehensive coverage of SQL Server architecture, performance, indexing and statistics strategies, optimize transaction log operations, tempdb and data file configuration, transactions and isolation levels, and locking and blocking.

TARGET AUDIENCE

The primary audience for this course is individuals who develop, administer and maintain SQL Server databases.

INTRODUCTION INTO SQL PERFORMANCE TUNING
In a course like this many different topics are discussed, so we start this training by briefly discussing the different topics and show how they relate to each other.

CPU AND PROCESS SCHEDULING
Threads and workers. Worker thread binding. Wait statistics analysis.

IO AND DATABASE STRUCTURE
Databases in SQL Server. Working with Data files. Using and configuring Filegroups. Log files.

MEMORY USE
Dynamic memory allocation. Memory consumers. Monitoring memory consumption.

DATA TYPES AND TABLES
Importance of data type selection. Storage cost. Variable versus fixed length. Implicit and explicit data type conversions.

INDEXES AND STATISTICS
Heaps. Clustered and non-clustered indexes. Monitoring allocation units. Creating filtered indexes. Indexes and statistics. Reading statistics. How the Query Optimizer uses statistics. Using filtered statistics. Working with indexed views. Configuring delayed durability.

QUERY EXECUTION AND QUERY PLANS
Execution context. Execution plans. Plan cache and plan reuse. Plan recompilation. Parameterization. Query store. Adaptive Query Processing. Automatic regressed plan detection.

INDEX AND QUERY TUNING
Understanding the query plan operators. How to measure query cost. Common query tuning techniques.

IMPROVED CARDINALITY ESTIMATOR
Cardinality estimates. Improvements in the new cardinality estimator. Which estimator is used? Discovering slower queries with the Query Store.

CONCURRENCY AND TRANSACTIONS
Transactions. Optimistic versus pessimistic concurrency control. Locking and lock types. Isolation levels. Monitoring locks. Deadlocks.

MONITORING SQL SERVER
Performance monitor. Profiler. Configuring Extended Event sessions.

WORKING WITH COLUMNSTORE INDEXES
Introduction to columnar data storage. Introduction to Rowgroups and segments. Creating Clustered ColumnStore Indexes. Creating NonClustered ColumnStore Indexes. Fragmentation in ColumnStore indexes. Real-time Operational Analytics.

WORKING WITH IN-MEMORY OLTP
Planning for In-Memory tables. Creating In-Memory tables. In-Memory tables and indexes. Working with Native Compiled Stored procedures.

USQLIS

0.5 DAYS

IMPLEMENTING DATA WAREHOUSES WITH INTEGRATION SERVICES

This course describes how to implement a data warehouse platform to support a BI solution. Students will learn how to create a data warehouse with Microsoft SQL Server 2019 or earlier, implement ETL with SQL Server Integration Services, and validate and cleanse data with SQL Server Data Quality Services and SQL Server Master Data Services. Details see www.u2u.be/cc/usqlis.

USQLRS

0.3 DAYS

MICROSOFT SQL SERVER REPORTING SERVICES

This course introduces the SQL Server Reporting Services platform, and teaches the necessary skills to develop, deploy and maintain Reporting Services reports on SQL Server. Details see www.u2u.be/cc/usqlrs

USQLAS

0.3 DAYS

MICROSOFT SQL SERVER ANALYSIS SERVICE

When analyzing business data, two challenges pop up frequently: the complexity of writing and maintaining queries which retrieve the proper data, and the performance issues which might surface when querying large amounts of data. OLAP (OnLine Analytical Processing) cubes provide fast aggregation querying over large amounts of data in a user-friendly way. In this course, you learn how to build, maintain and query OLAP cubes with Microsoft SQL Server Analysis Services. Details see www.u2u.be/cc/usqlas.

USQLAT

02 DAYS

MICROSOFT SQL SERVER ANALYSIS SERVICES TABULAR

This instructor-led course will provide you with the knowledge and skills to develop Tabular models in SQL Server Analysis Services 2019 or earlier: Loading data from different sources, enrich data with business concepts (e.g. year-to-date) using DAX, define KPIs and hierarchies,... The course describes as well how to administer tabular databases: Backup, security, monitoring and automating the maintenance of Analysis Services Tabular. Details see www.u2u.be/cc/usqlat

WINDOWS SERVER & POWERSHELL

WINDOWS SERVER ADMINISTRATION

05 DAYS

WS-011

06 - 10 December 2021
21 - 25 February 2022
25 - 29 April 2022
22 - 26 August 2022

LEARNING GOALS

This five-day instructor-led course is designed primarily for IT professionals who have some experience with Windows Server. It is designed for professionals who will be responsible for managing identity, networking, storage and compute by using Windows Server 2019/2022, and who need to understand the scenarios, requirements, and options that are available and applicable to Windows Server 2019/2022.

TARGET AUDIENCE

This course is intended for Information Technology (IT) Professionals who have some experiencing working with Windows Server and are looking for a single five-day course that covers core administration components and technologies in Windows Server 2019/2022.

WINDOWS SERVER ADMINISTRATION OVERVIEW
Introducing Windows Server. Windows Server Core Overview. Windows Server administration principles and tools overview.

IDENTITY SERVICES IN WINDOWS SERVER
AD DS Overview. Deploying Windows Server domain controllers. Azure AD overview. Implementing Group Policy. Active Directory Certificate Services overview.

NETWORK INFRASTRUCTURE SERVICES IN WINDOWS SERVER
Deploying and managing DHCP. Deploying and managing DNS service. Deploying and managing IPAM.

FILE SERVERS AND STORAGE MANAGEMENT IN WINDOWS SERVER
Volumes and File Systems in Windows Server. Implementing sharing in Windows Server. Implementing Storage Spaces in Windows Server. Implementing Data Deduplication. Implementing iSCSI. Deploying Distributed File System.

HYPER-V VIRTUALIZATION AND CONTAINERS IN WINDOWS SERVER
Hyper-V in Windows Server. Configuring VMs. Securing virtualization in Windows Server. Containers in Windows Server. Overview of Kubernetes.

HIGH AVAILABLITY IN WINDOWS SERVER
Planning for failover clustering implementation. Creating and configuring a failover cluster. Overview of stretch clusters. High availability and disaster recovery solutions with Hyper-V VMs.

DISASTER RECOVERY IN WINDOWS SERVER
Hyper-V Replica. Backup and restore infrastructure in Windows Server.

WINDOWS SERVER SECURITY
Credentials and privileged access protection. Hardening Windows Server. JEA in Windows Server. Securing and analyzing SMB traffic. Windows Server update management.

RDS IN WINDOWS SERVER
Overview of RDS. Configuring a session-based desktop deployment. Overview of personal and pooled virtual desktops.

REMOTE ACCESS AND WEB SERVICES IN WINDOWS SERVER
Implementing VPNs. Implementing Always On VPN. Implementing NPS. Implementing Web Server in Windows Server.

SERVER AND PERFORMANCE MONITORING IN WINDOWS SERVER
Overview of Windows Server monitoring tools.
Using Performance Monitor.
Monitoring event logs for troubleshooting.

UPGRADE AND MIGRATION IN WINDOWS SERVER
AD DS migration. Storage Migration Service. Windows Server migration tools.

MASTERING POWERSHELL

05 DAYS

UPSHELLA

07 - 11 February 2022
21 - 25 March 2022
16 - 20 May 2022
04 -08 July 2022
26 - 30 September 2022

LEARNING GOALS

This course will get you acquainted with PowerShell and PowerShell Core. You will learn how to customize the PowerShell environment to your needs and how to automate and script administration, configuration, monitoring and deployment of Windows based servers and applications.

TARGET AUDIENCE

System Administrators who are responsible for the management and configuration of a Windows Server, a Microsoft Azure or Microsoft 365 Infrastructure. Developers interested in automation and embedding PowerShell in their application.

POWERSHELL OVERVIEW
PowerShell Overview. Brushing up on objects. PowerShell Versions. Windows PowerShell versus PowerShell Core. Concepts and Terminology. Getting Commands. Getting Help. Providers and Drives. PowerShell Aliases. PowerShell Aliases.

POWERSHELL SHELLS
PowerShell Console. Integrated Scripting Environment (ISE). Visual Studio Code.

CORE CONCEPTS
Viewing Object Structure. Object Pipeline. Using Format Cmdlets to Change Output. Export Data with Out Cmdlets. Using Variables to Store Objects. Working with the Object cmdlets: Where-Object, Foreach-Object, ...

OBJECT PIPELINE PROCESSING
Where-Object. Foreach-Object. Select-Object. Sort-Object. Measure-Object. Compare-Object. Group-Object. Tee-Object.

WORKING WITH OBJECTS
Files and Folders. Registry Keys and Values. COM Objects. WMI Objects. .NET Objects. Static Classes.

EXTENDING POWERSHELL FUNCTIONALITY
Modules. Package Manager. PowerShell Gallery. PowerShell Profiles. Operators and Expressions.

POWERSHELL REMOTING
PowerShell Remoting Overview. WS-Management (WSMAN). Remote CIM Sessions. Import/Export Remoting Sessions. WinRM Security. WinRM Double Hop Problem. Using Variables in Remoting Sessions. Remoting with PowerShell Core.

POWERSHELL SECURITY
PowerShell Execution Policy. Script Signing. Security Sensitive Information in Scripts.

POWERSHELL SCRIPTING
Foreach and For. While - do while - do until. If - Switch. Break - Continue.

MANAGING YOUR ENVIRONMENT
Networking. File Shares. Data Import. Security. Server Management. Active Directory. Certificates.

POWERSHELL JOBS
Background Jobs. Remoting Jobs. Scheduled Jobs.

ERROR HANDLING
Debugging options. Error Handling. Trap Statement. Try - Catch Statement.

DEVOPS: DESIRED STATE CONFIGURATION
Desired State Configuration Overview. DSC Components: Configuration - Node - Resource. Apply DSC Configurations. Push versus Pull Mode. Azure Automation DSC.

ADVANCED SCRIPTING
Functions. Script Basics. Advanced Functions. Advanced Parameter Configuration. Command Documentation. Creating a PowerShell Module. Creating your own Cmdlets.

JEA: JUST ENOUGH ADMINISTRATION
JEA Overview. Role Capabilities. Session Configurations. Register JEA Endpoint. Auditing and Reporting.

POWERSHELL ON LINUX
Install PowerShell Core on Linux. Manage Linux Systems. Manage Windows Systems from Linux. Remoting over SSH.

U2U

THE U2U TRAINING CENTER

HOW TO GET HERE?

BY CAR
U2U is located next to the Brussels ring-road (R0) at exit 10. Our training center provides ample parking space.

BY BUS
From bus stop "Ganshoren Sport" (bus 84 or 87) it takes 5 minutes walking to get to our training center.

BY TRAIN
The walking path takes you in 15 minutes from the city railway station Sint-Agatha-Berchem to the U2U training center.

BY AIR
From Brussels International Airport, it takes 15 minutes by taxi or 35 minutes by train to arrive at U2U. From the airport Brussels South (Charleroi), it takes less than 1 hour by shuttle bus, train or taxi.

OUR LOCATION

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