
U2U TRAINING
DATA VISUAL STUDIO
JAVASCRIPT AZURE
OFFICE 365
COURSE AGENDA
OCT. 2019 - APR. 2020
On-schedule in Brussels
On-site in Europe & Middle East

OUR MISSION

U2U will provide you with an in-depth technical knowledge and an accurate view on the concepts and architecture of the technologies, achieved in a series of lectures and exercises.

OUR COURSEWARE

Many of the U2U courses are developed and authored by U2U instructors and are constantly being updated to reflect the latest changes. Our courses involve lectures, demos and hands-on labs.

OUR TRAINERS

All U2U instructors are experienced presenters who can make the most challenging topics easy to understand. We deliver top quality courses by instructors who are experts in the technology.

OUR PLATFORM

U2U Online is the learning platform used during and after the U2U classroom-based courses. Amongst others, it provides a preconfigured cloud environment to complete the lab exercises.

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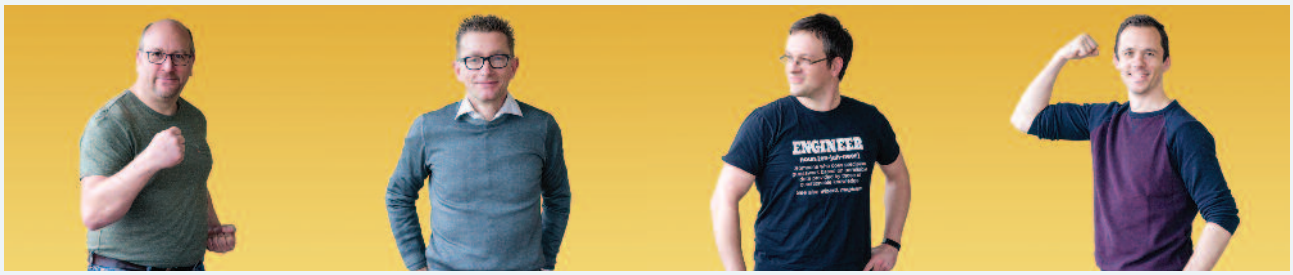
Meet our trainers



Peter Himschoot | Jurgen Postelmans | Robrecht Van Caenegem | Tommy Vanhee

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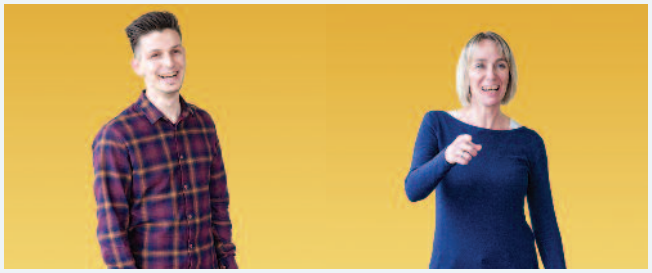

Bram De Backer | Els Putzeys

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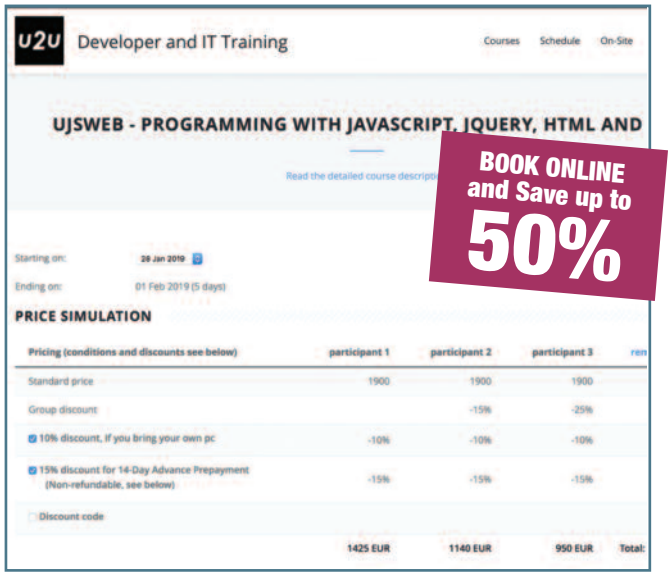
On-schedule courses

Our open enrollment courses are organized regularly **in our training center in Brussels**. The courses are conducted in **English** in a classroom with a highly skilled and experienced instructor. Students attend the course in person and can **register for a scheduled class on our website**.

Prices

All prices and scheduled dates are listed on page 6 & 7.



What is included in our price?

- Participation to the instructor-led training
- Course manual containing the presentation and hands-on labs
- Preconfigured laptop to complete the hands-on labs
- Lunch, coffee and beverages

Available discounts

10% discount, if you bring your own laptop to the course.

15% discount for 14-Day Advance Prepayment.
Your registration will be final and cannot be refunded, cancelled or changed.

15% discount for the second participant of the same company. **25% discount** from the third participant onwards of the same company.

How to obtain a 50% discount?

Book multiple participants in the same course program and select the 'bring your own laptop' discount and the '14-Day Advance Prepayment' discount. The first participant will receive a 25% discount, the second a 25% + 15% = 40% discount and from the third participant of the same company, a 25% + 25% = 50% discount will be given. Your group's price for a 5-day course with normal price 1900 €:

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

Or obtain a 20% discount with your contract code

If your company requires 25 or more training days in one year, the Enterprise Training Agreement provides a significant discount opportunity of 20% on all scheduled courses. Contact us (info@u2u.be) and we will provide you with a contract code that you can use each time you register an employee of your company. This discount is not cumulative with other discounts offered by U2U.

On-site courses

An on-site course can provide a more economic and convenient solution for companies that want to train a **group of people**. Our instructor visits you **at your location** to deliver any of the courses in our catalog. Our private on-site 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 adjusted 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

An exclusive course is organized in your office throughout Europe or the Middle-East or in our training center in Brussels. We will bring the course manual and provide the online lab environment.

Prices

Our group price starts at 6500€ for 5-day on-site training up to 10 participants.

What is included in our price?

- The organization of consecutive training days on-site in your classroom.
- The number of participants to the course is not limited.
- All courseware for 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.

SA Vouchers & Kmo-portefeuille

SA Training Vouchers

Microsoft Software Assurance Training Vouchers: As part of the Microsoft Software Assurance for Volume Licensing program, Microsoft offers their customers benefits such as Training Vouchers. Those vouchers can be used to pay for Microsoft Official Courses at U2U.

Kmo-portefeuille

Dankzij de subsidiemaatregel van de Vlaamse overheid, de Kmo-portefeuille, kan u voor uw opleiding tot 40% subsidies ontvangen. Het registratienummer van U2U voor de pijler opleiding is **DV.0213569**.

Schedule October 2019 - April 2020

VISUAL STUDIO

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
SEMINARS										
UMST	Microsoft Windows & Web Development - Technology Overview	850 €	2					13		
PROGRAMMING FUNDAMENTALS .NET										
UCSPR	Object-Oriented Programming in C#	1850 €	5	21	25			3	23	
UVBNET	Object-Oriented Programming in Visual Basic .NET	1850 €	5		25			3		
UNOOP	Advanced Object-Oriented Programming Techniques in .NET	1900 €	5	7		2		17		6
WEB DEVELOPMENT										
UNASPA	Programming in ASP.NET MVC and JavaScript	1900 €	5	14	25			10	30	
UNASPC	Programming in ASP.NET Core and JavaScript NEW	1900 €	5	14	25			10	30	
UWEBA	Advanced Web Development with Visual Studio 2019	1900 €	5	21	18			17		20
UCORE	Upgrading to ASP.NET Core	1300 €	3	21	18			17		20
UWAPI	Building REST Services with ASP.NET Web API	900 €	2	10		18		20		16
UWSEC	Web Security Development Techniques	1300 €	3	28		2	27		23	
UBLZ	Building Single Page Applications with Blazor NEW	900 €	2	28			16			2
WINDOWS DEVELOPMENT										
UWPF	Building Windows Applications with WPF	1900 €	5		25			24		
ENTERPRISE & ARCHITECTURE										
UARCH	.NET Best Practices: Architecture & Design Patterns	1900 €	5		4		27		9	
UTEST	Effective Unit Testing	900 €	2		12		16		9	27
UDEF	Domain Driven Design with Entity Framework Core NEW	900 €	2			12		10		14
UWCF	Programming with Windows Communication Foundation	1900 €	5		4				2	
CROSS-PLATFORM MOBILE FRAMEWORKS										
UXAMAR	Building apps for iOS, Android and Windows with Xamarin	1900 €	5	14		2		10		6
BIZTALK DEVELOPMENT										
UBTSD	Developing Solutions Using Microsoft BizTalk Server 2016	1900 €	5				27			

AZURE

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
AZURE FOR DEVELOPERS										
UAWEB	Developing & Deploying Web Apps on Microsoft Azure	1600 €	4	7	25		27		23	
UAMIC	Developing Microservices with Containers, Kubernetes and Microsoft Azure	1300 €	3			9		3	30	
UIOT	IoT with Windows 10 and Microsoft Azure	900 €	2	28		16		20		
UADAI	Developing Solutions and Bots with the Microsoft AI Platform	1300 €	3	14		16		24		27
UTFS	Team Development with Azure DevOps	1300 €	3		12		20		23	
AZURE FOR ADMINISTRATORS										
UAZUREA	Microsoft Azure Infrastructure Services & Azure AD	1900 €	5			9	20		9	
UAZUREI	Microsoft Azure Infrastructure Services	1300 €	3			9	20		9	
UAAD	Azure Active Directory Identity Management	900 €	2	3		12	23		12	
UAOM	Microsoft Azure Operations Management NEW	1300 €	3	9				3		14
UACON	Managing Containers with Kubernetes and Microsoft Azure NEW	900 €	2	7		18		24		29
UINT	Mobile Workforce Management with Microsoft Intune NEW	900 €	2	30				6	26	
AZURE DATA PLATFORM										
UADATA	Data Engineering and AI on the Microsoft Azure Platform NEW	1900 €	5	14		9		24		20
UADE	Microsoft Azure Big Data for Data Engineers NEW	1300 €	3	14		9		24		20
UADS	Data Science with Python on the Microsoft Azure Platform NEW	900 €	2	17		12		27		23
UAML	Azure Machine Learning Studio	900 €	2		4				4	
UASQL	Implementing Azure SQL Databases	900 €	2		7			6		29

JAVASCRIPT

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
WEB FUNDAMENTALS										
UJSDEV	JavaScript Fundamentals	1300 €	3	2	20		22		18	
UJSWEB	Programming with JavaScript, jQuery, HTML and CSS	1900 €	5		18		20		16	
JAVASCRIPT LIBRARIES										
UJSLIB	Building modern web sites with JavaScript libraries	1300 €	3	7		16		17		14
UANG	Building web apps with Angular and TypeScript	1300 €	3		12	16		3	23	
UANGA	Mastering Angular	1300 €	3		27		20		16	
UREACT	Developing web apps with React	1300 €	3	23		9			16	
CROSS-PLATFORM MOBILE FRAMEWORKS										
UREACTN	Mobile Development with React Native NEW	900 €	2	21			23		5	29

All prices listed are in Euro and are 21% VAT exclusive. The prices listed on our calendar are for courses scheduled and organized at the U2U training centre in Brussels. The course price includes the high-quality lecture, hands-on exercises on an individual PC, a U2U course book or Microsoft Official Courseware, coffee, soft drinks and lunch. The prices are valid for all bookings registered at U2U after 1st October 2019 and before 30th April 2020.
Cancellations up to 8 days before the course are at no charge. Cancellations after this date, as well as no-shows, will be liable for the full registration fee. Substitutions may be made at any time by providing U2U with written notice of the names of both the original and substitute registrant. Please send cancellation or substitution information by email to info@u2u.be.

OFFICE 365, SHAREPOINT 2016/2019 & ONLINE

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
OFFICE 365 FOR POWER USERS										
U0365P	Office 365 Essentials	1300 €	3	28		16		24		27
UFLOWP	Microsoft PowerApps and Microsoft Flow	1300 €	3	28	25		22		2	14
USPOP	Microsoft SharePoint Online for Power Users	1900 €	5		18		13	24		20
SHAREPOINT FOR TECHNICAL MANAGEMENT										
USPOT	Microsoft SharePoint Online Technology Overview	850 €	2		14		16			14
OFFICE 365 FOR DEVELOPERS										
USPFX	Developing with the SharePoint Framework	1900 €	5		18		20		23	
USPOAP	Modern Development with SharePoint Online and Office 365	1900 €	5		4		13		16	
OFFICE 365 FOR IT PROFESSIONALS										
U0365A	Configuring and Administering Office 365	1600 €	4	28		16		10		6
UPDATE YOUR SKILLS										
USP19U	What's new in SharePoint Server 2019 NEW	450 €	1		22				6	
SHAREPOINT SERVER FOR POWER USERS										
USP16P	Microsoft SharePoint 2016 for Power Users	1900 €	5	7		9		3		6
USP19P	Microsoft SharePoint 2019 for Power Users	1900 €	5	7		9		3		6
SHAREPOINT SERVER FOR DEVELOPERS										
USP19AP	Modern Development with SharePoint 2019	1600 €	4		4		13		16	
USPFX	Developing with the SharePoint Framework	1900 €	5		18		20		23	
SHAREPOINT SERVER FOR ADMINISTRATORS										
USP19A	Administering Microsoft SharePoint 2019	1900 €	5		25			17		

SQL SERVER

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
SQL SERVER FOR DEVELOPERS										
UTSQL	Querying SQL Server with Transact-SQL	1300 €	3		18		13		2	14
USQLD	Developing and optimizing SQL Server databases	1900 €	5	14		2		10	30	
USQLOP	SQL Server Performance Tuning and Optimization	1900 €	5	7		9		10		20
SQL SERVER FOR ADMINISTRATORS										
USQLA	Administering Microsoft SQL Server Databases	1900 €	5		18		27		23	
UPDATE YOUR SQL SERVER SKILLS										
MS10998	Updating Your Skills to SQL Server 2017	900 €	2	28						
BUSINESS INTELLIGENCE FOR BI PROFESSIONALS										
USQLIS	Implementing Data Warehouses with Integration Services	2000 €	5		25			17		
USQLAS	Microsoft SQL Server Analysis Services	1900 €	5		4		20			6
USQLAT	Microsoft SQL Server Analysis Services Tabular	900 €	2		14			3		27
USQLRS	Microsoft SQL Server Reporting Services	1900 €	5	21		9			9	
URBI	Business Intelligence with R	900 €	2		12				2	
BUSINESS INTELLIGENCE FOR TECHNICAL MANAGEMENT										
UBIT	Microsoft Business Intelligence - Technology Overview	900 €	2			16			6	

POWER BI

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
UBIPBE	Analyzing your data with Power BI for Business Users	1300 €	3	28		16		10	23	
UBIPB	Analyzing your data with Power BI for BI Professionals	1900 €	5	21		9	25	3		6
UDAX	Mastering DAX NEW	900 €	2		14		27			14
UBIPBD	Developing for the Power BI Platform	1300 €	3		25			17		27

DYNAMICS 365

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
DYNAMICS CRM FOR POWER USERS										
UCRM365E	Using Microsoft Dynamics 365	1300 €	3		4			24		
UCRM365P	Microsoft Dynamics 365 for Power Users	1900 €	5		18		27		30	
DYNAMICS CRM FOR DEVELOPERS										
UCRM365D	Developing Microsoft Dynamics 365 Solutions	1900 €	5		18			3		6

WINDOWS SERVER

		Price	Days	Oct	Nov	Dec	Jan	Feb	Mar	Apr
WINDOWS SERVER 2012/2016										
MS10967	Fundamentals of a Windows Server Infrastructure	1900 €	5		18		27		30	
UPKI	Public Key Infrastructure	900 €	2			16		26		27
ACTIVE DIRECTORY SERVICES										
MS20742	Identity with Windows Server 2016 AD Services	1900 €	5			9			2	
UADFS	Implementing Active Directory Federation Services	1600 €	4		12		13		16	
POWERSHELL										
UPSHELLA	Mastering PowerShell	1900 €	5	14		9		17		20
UPSHELL	Scripting with PowerShell	1300 €	3	14		9		17		20

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#

5 days **UCSPR**

21 - 25 October 2019
25 - 29 November 2019
03 - 07 February 2020
23 - 27 March 2020
11 - 15 May 2020
22 - 26 June 2020

Learning Goals
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 possibilities through examples in Console, WPF and ASP.NET MVC applications.

Target Audience
This training targets developers with no or limited C# experience. A basic understanding of programming - in whatever language - is advised.

Overview of .NET
What is a .NET Application? The Common Language Runtime and .NET Class Libraries. .NET, .NET Core, .NET Standard, Xamarin/Mono. .NET Applications: MVC, Web API, WPF, UWP,...

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

5 days **UNOOP**

07 - 11 October 2019
02 - 06 December 2019
17 - 21 February 2020
06 - 10 April 2020
08 - 12 June 2020

Learning Goals
Today, applications have to be more responsive, scalable and high-performing. Therefore, modern .NET developers have to be familiar with the more advanced features of C#, VB.NET and the .NET Framework. This course examines advanced concepts of the framework like async programming, parallel computing and Reactive Extensions. You'll explore the new C# language features like Tuples and Span<T>. 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 the Dynamic Language Runtime
Understanding the Dynamic Keyword. Talking to JavaScript Objects using the Dynamic Keyword. Building your own Dynamic Types.

Modern Language Features
Write concise code with expression-bodied functions. String interpolation. Handling null references. Discards. Pattern matching. Local functions. Indices and ranges.

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

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.

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

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

Multithreading in .NET
The Thread class, ThreadStart delegate. 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. How to make your sync methods async. Async guidelines.

Parallel Computing
What is parallel programming? Concurrent collections. Parallel LINQ.

Reactive Extensions
Push vs. Pull. Reactive Extensions = LINQ to events. Understanding IObservable<T> and IObserver<T>. Building your own Rx Extensions.

Tips and Tricks for Debugging
Advanced Breakpoints. Immediate and watch window. Debugging multi-threaded code.

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. Getting the Name of a Property. Dynamically Generating Code with Static Reflection.

Building Windows Applications with WPF

5 days **UWPF**

This course will teach you how to build business applications with Windows Presentation Foundation. You will learn to create functional and attractive user interfaces using XAML. Since most business applications are data-driven, you will learn how to handle data using the Entity Framework and how to consume data from web services. Furthermore, you'll get acquainted with the MVVM pattern, making your code maintainable and testable. Details see www.u2u.be/cc/uwpf.

Building apps for iOS, Android and Windows with Xamarin

5 days **UXAMAR**

14 - 18 October 2019
02 - 06 December 2019
10 - 14 February 2020
06 - 10 April 2020
15 - 19 June 2020

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.

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

Introduction to Xamarin
Mobile development. Architecture. Deployment Environments. Cross-Platform Development. Core and Platform-Specific Projects. Sharing Code across projects.

Android in a nutshell
The Android Platform. Building Blocks of an Android Application. Activities, Services, Content Providers, Broadcast Receivers, Intents. Views and ViewGroups. Resources. Android Package.

Xamarin for Android
Xamarin.Android Architecture. Xamarin.Android Project. Working with Emulators. Designing a View. Resources. Navigation. Deploy Android applications.

Android Views
Views and ViewGroups. Common Views. Layouts. Adapters and ListViews. Styles.

iOS in a nutshell
The iOS Platform. Version Management. Building Blocks of an iOS Application. Protocols and Delegates. iOS Package.

Xamarin for iOS
Xamarin.iOS Architecture. Xamarin.iOS Project. Designing a View with Interface Builder. Building iOS applications. Working with the Simulator. Debugging iOS applications. Deploy iOS applications.

iOS Views
Interface Builder. Outlets and Actions. Layouts. Storyboards. Styles.

Windows in a nutshell
The Windows Platform. Windows Project. Process Life Cycle. Creating a view with XAML. Navigation. The Windows Package. Build and Deploy.

Windows Views
XAML Basics. Common Controls. Layout. Resources. Styles and Templates. Data Binding.

Cross-Domain Code Patterns
MVVM. Dependency Injection. Using Shared Projects.

Xamarin.Forms
Hello Forms. Controls Overview. Data Binding. Navigation. Platform Tweaks.

Local Data
Platform-specific storage options. SQLite database. ADO.NET. Entity Framework Core.

Web Services
Consuming a REST Service. Serialization and Deserialization. Consuming a SOAP Service. Using proxies for WCF.

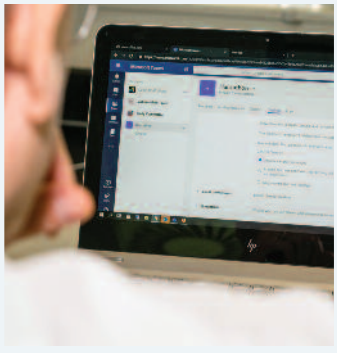
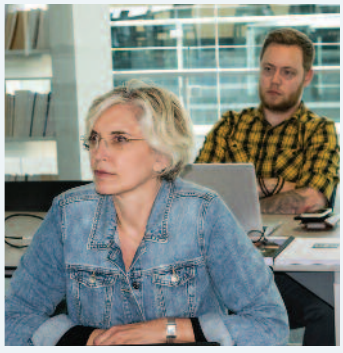
Running in the background
Application Lifecycle. Platform-specific considerations. Android's activity life cycle and Services. iOS backgrounding techniques. Backgrounding in Windows.

Library Bindings
Integrating with third-party native libraries. Java Library Binding. Objective-C/Swift Library Binding.

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

Azure Notification Hub
Setting Up Platform Agnostic Push Notifications. Setting Up the App. Setting Up the Backend. Templates and Tags.

Visual Studio App Center
Build and Test your App. Collection Diagnostics and Usage Analysis. Authenticate with B2C. Use CosmosDB to store your Data. Send Push Notifications. Distribute to the Store or within your Enterprise.

.NET Best Practices: Architecture & Design Patterns

5 days **UARCH**

04 - 08 November 2019
27 - 31 January 2020
09 - 13 March 2020
04 - 08 May 2020

Learning Goals
So how can you become a better developer? One of the best ways is by learning design patterns. Design Patterns provide reusable solutions to solve common software design problems. 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 S.O.L.I.D. principles, Domain Driven Design and Clean Architecture, and apply what we've learned. 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 the .NET Framework.

SOLID principles
S - Single Responsibility. O - Open/Closed. L - Liskov Substitution. I - Interface Segregation. D - 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.

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. Patterns everywhere: the difference between implementation, design and architecture patterns... When to apply patterns, and when not to. Some anti-patterns.

Creational patterns
Singleton - a.k.a. The Pluto Pattern and how the .NET runtime can help at implementing it. Builder - seperating the construction from the representation. Factory Method - delegating/hiding the creation of objects to a factory. Abstract Factory - abstracting the factory to create families of objects.

Behavioral patterns
Template Method - defer exact parts of an algorithm to inheriting classes, delegates, ... Strategy - template method without the annoying inheritance. Chain of Responsibility - strategy to go through a chain of strategies. State - defer state dependending logic to state classes, state machines, using the Stateless library. Iterator - providing a generic way of navigating through collections, yield is your friend, asynchronously iterating a collection. Observer - notifying whoever is interested in what you have to say, event vs. delegate. Mediator - providing two-way communication between objects unaware of one another, correcly implementing INotifyPropertyChanged. Visitor.

Structural patterns
Adapter - plugging in different objects into your code that do not fit. Decorator - altering the behavior of an object without the caller realising it. Composite - tree structures are here to help you, working with Linq Expressions. Facade - hiding the complexity of subsystems from the caller. Flyweight - reduce memory consumption by preventing unnecessary creation of object. Proxy - proxying requests made to the subject without changing the behavior.

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. Building your own interpreter for simple math. 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. How NOT to use reflection. Visitor: When you need a lot of different operations on the same object structure. Building a pretty-printer using Visitor. Implementing Visitor the dynamic way.

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.

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.

Domain Driven Design
What is Domain Driven Design? The Ubiquitous Language. Anti-Pattern: Bug Ball of Mud. Adding Bounded Contexts. Entities vs. Value Objects. Anti-Pattern: Death by a thousand dots. Using aggregate roots. Building Domain Services. Repository: keep the database out of your code.

Architecting Modern Web Applications
Separation of Concerns, Dependency Inversion, Explicit Dependencies, Persistence Ignorance. "Clean" architecture: put the business and application model at the center. Easily tested with Automated tests.

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 NEW

2 days **UDEF**

12 - 13 December 2019
10 - 11 February 2020
14 - 15 April 2020
18 - 19 June 2020

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 Domain Driven Design? Advantages of using Domain Driven Design. When is Domain Driven Design a bad option? Anti-Pattern: Big Ball of Mud. Anti-Pattern: Death by a Thousand Dots.

Strategic Design
The linguistic delimitation that are Bounded Contexts. Identifying the terms and concepts with the Ubiquitous Language. Relating Bounded Contexts with Context Maps. Applying Strategic Design to a real world business case.

Tactical Design
Differentiating between Entities and Value Objects. Clustering Entities and Value Objects with Aggregates. Providing domain specific operations with Services. Data storage by using Repositories. Abstracting the creation of Entities, Value Objects and Aggregates with Factories. Publishing significant domain changes with Events. Segregating concepts using Modules. Applying Tactical Design to a real world business case.

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.

Introduction to Entity Framework
What is Entity Framework? 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
Scaffolding your project from an existing database. Understanding the Generated code. Interacting with the database.

Modeling your database with EF Core
Methods of configuration. Creating and applying migrations. Table and column mapping. Modeling properties. Value generated properties. Using Owned and Shadow Properties. Concurrent updates. Modeling relationships. Mapping inheritance.

Mapping DDD to EF.
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.

Mapping Domain Entities to EF Entities
No more 'Death by a Thousand Dots'. Using AutoMapper to convert between domain and EF entities. Building Proper Services. Choosing the right layer for your service implementation.

Effective Unit Testing

2 days **UTEST**

12 - 13 November 2019
16 - 17 January 2020
09 - 10 March 2020
27 - 28 April 2020
25 - 26 June 2020

Learning Goals
This course teaches you the art of unit testing, where you learn to build testable code and various techniques to give your code a good spin. U2U is known for is real-life approach to training, so each chapter is accompanied with a hands-on lab.

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

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 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.

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. S.O.L.I.D. Priciples. Dependency injection. How the MVVM pattern facilitates UI testing. Replacing configuration in tests. Testing database code.

Unit Testing ASP.NET Web Applications
Challenges when unit testing MVC applications. Writing unit test for your MVC controllers. Unit testing your views. Unit testing ApiControllers.

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.

Automatic Regression Testing
What is a regression? Using an automated build system. Continuous integration. Running integration tests. Automatic regression tests.

Web Security Development Techniques

3 days **UWSEC**

30 September - 02 October 2019
28 - 30 October 2019
02 - 04 December 2019
27 - 29 January 2020
23 - 25 March 2020
18 - 20 May 2020

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 MVC and ASP.NET Web API.

Target Audience
This course is meant for developers that have experience with ASP.NET MVC 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 is different. 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
Introducing OAuth 2. OpenID Connect: Adding sign-in to OAuth2. OAuth fundamentals: Authorization Code Grant, Implicit Grant and Client Credential Grant. Implementing OpenID Connect web sign-in. Implementing Hybrid Flow. Deeper understanding Hybrid Flow.

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 Active Directory Authentication Library (ADAL). ADAL Session management. User consent.

Web site security threats and defences
OWASP - Top 10 security issues. Injection - Never trust user input! Broken authentication. Sensitive data exposure. XML External Entities (XEE). Broken Access Control. Security Misconfiguration. Cross-site scripting (XSS). Insecure Deserialization. Using components with known vulnerabilities. Insufficient Logging & Monitoring. Extra: Cross Site request forgery (CSRF).

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.

Programming with ASP.NET MVC, ASP.NET Core and JavaScript

5 days

UNASPA
UNASPC

14 - 18 October 2019
25 - 29 November 2019
10 - 14 February 2020
30 March - 03 April 2020
25 - 29 May 2020
29 June - 03 July 2020

Learning Goals
This course will teach you how to build Web applications using the ASP.NET MVC framework both in .NET Core and .NET Framework. You will also learn how to create and consume RESTful services with ASP.NET Web API, JavaScript and jQuery.

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 both .NET Framework and .NET Core.

The HTTP Protocol
Http Verbs. Headers. Status Codes. Redirection. Caching.

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

The 3 main ASP.NET MVC components
Handling user interaction with Controller. Rendering the response with MVC views. MVC model and viewmodel. 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.

jQuery Basics
Why jQuery? The jQuery wrapped set. Detecting Page Readiness. Selecting elements with CSS selectors.

Responsive web design with Bootstrap
Normalizing and Resetting. The Grid System. Utility classes.

ASP.NET Framework Pipeline
Clean URIs. Controllers and Actions. ActionResults and ViewEngines.

ASP.NET Core Pipeline
Middleware in ASP.NET Core. Composing your own Pipeline.

ASP.NET MVC Routing
Formatting the request URL. Convention-Based Routing. Routing Attributes. Areas for building large MVC sites. Debugging URL routing.

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 and Child Actions. 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.

Building and Consuming 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 jQuery
JSON serialization. Getting data using jQuery AJAX. Uploading and updating entities through REST: POST, PUT, DELETE, PATCH.

Authentication
Windows integrated. Username and password. Using external authentication such as Google or Facebook. Extending authentication with your own data. Tokens. Impersonation and delegation.

Advanced Web Development with Visual Studio 2019

5 days

UWEBA

21 - 25 October 2019
18 - 22 November 2019
17 - 21 February 2020
20 - 24 April 2020
22 - 26 June 2020

Learning Goals
So you've been using ASP.NET MVC for a while, and you want to learn more? In this advanced web development course you will build up the necessary knowledge and tools for dealing with the complexity of modern web applications, including .NET Core, Clean Architecture, and get more insights into client-side development, error handling, Azure and Security.

Target Audience
This course is meant for developers that have experience with ASP.NET MVC and want to take it to the next level.

.NET Core
Understanding .NET Core: .NET Framework versus .NET Core. Supporting multiple runtimes.

Visual Studio improvements for ASP.NET Core
The new project structure. Compile directly to memory. Targeting frameworks and handling differences. Executing commands and tools. Bundling and Minification.

.NET Core Cross-Platform Capabilities
Developing ASP.NET Core on any platform. Generating a .NET Core Project using the .NET cli. Getting started with Visual Studio Code.

ASP.NET Core Pipeline
The principle of the ASP.NET Core Pipeline. Selecting your middleware in the Startup class. Dependency injection and how to configure it. Adding your first middleware for serving static files. Routing middleware. Showing proper diagnostics while developing.

The new ASP.NET Core Configuration
No more web.config. Formats: JSON, INI or XML. Environment variables and user secrets. Getting configuration to your code. Options pattern. Adding your own configuration provider.

Logging
Choosing from different logging providers. Understanding logging scopes. Using NLog. Logging guidelines and recommendations.

OWIN and Middleware
The OWIN specification. Project Katana. Building your own custom middleware.

ASP.NET Core and MVC
Web UI and Web API Unification. MVC routing changes. Understanding _ViewStart.cshtml and _ViewImports.cshtml. More powerfull Razor with tag helpers. Building View Components. Service Injection.

Entity Framework Core
Difference with Entity Framework 6. Scaffolding your project from an existing database. Generated code. Interacting with the database.

Modeling your database with EF Core
Methods of configuration. Migrations. Table and column mapping. Modeling properties. Value generated properties. Using Owned Entities and Value objects. Concurrent updates. Modeling relationships.

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

Blazor
Introducing Blazor. Client-Side vs. Server-Side Blazor. Creating a simple Blazor Component. Hosting Blazor. How does it work?

Architecting Modern Web Applications
S.O.L.I.D. principles. Separation of Concerns, Dependency Inversion, Explicit Dependencies, Persistence Ignorance. "Clean" architecture. Easily tested with Automated tests.

Services in ASP.NET
REST services with ASP.NET Web API. Exposing Entities with OData.

Azure App Services: Web Apps
Using the Web Site Gallery. Deploying from Visual Studio. Free, shared, basic and standard plans. Scaling options. Configuring app settings, TLS, domain names and backup scheduling. Monitoring.

Logging and monitoring your applications with Application Insights
Enabling Application Insights. Diagnosing Failures. Diagnosing Dependencies. Custom events and using Metrics Explorer. Availability and Performance. Using Alerts to detect live problems early. Snapshot debugging. Power BI dashboards.

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
Introducing OAuth. OpenID Connect: Adding sign-in to OAuth. OAuth fundamentals: Authorization Code Grant, Implicit Grant and Client Credential Grant. Implementing OpenID Connect web sign-in.

Protecting a Web-API with OAuth
Protecting resources. Adding permissions to the server side. Requesting permissions at the client side. Using the Active Directory Authentication Library (ADAL). ADAL Session management. User consent.

Error Handling
Handling errors at different levels in ASP.NET. HandleErrorAttribute. Handling on the level of the hosting platform. Properly returning a 404 and 500 page. Http Status Codes best practices.

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

Performance Tips
Working with Async methods. Limiting network bandwidth with bundling and minification. Using Content Delivery Networks. Always run release in production. Various performance tweaks.

Upgrading to ASP.NET Core

3 days **UCORE**

21 - 23 October 2019
18 - 20 November 2019
17 -19 February 2020
20 - 22 April 2020
22 - 24 June 2020

Learning Goals
ASP.NET Core is a dramatic change to what ASP.NET used to be. Deploy your web app on linux or even a raspberry Pi. This is the best thing to happen to ASP.NET since a long time. Join us in this game of codes.

Target Audience
Developers with ASP.NET MVC experience.

.NET Core
.NET Framework versus .NET Core. Supporting multiple runtimes.

Visual Studio improvements for ASP.NET Core
The new project structure. Compile directly to memory. Targeting frameworks and handling differences. Executing commands and tools. Bundling and Minification.

.NET Core Cross-Platform Capabilities
Developing ASP.NET Core on any platform. Generating a .NET Core Project using the .NET cli. Getting started with Visual Studio Code.

ASP.NET Core Pipeline
The principle of the ASP.NET Core Pipeline. Selecting your middleware in the Startup class. Dependency injection and how to configure it. Adding your first middleware for serving static files. Routing middleware. Showing proper diagnostics while developing.

The new ASP.NET Core Configuration
No more web.config. Formats: JSON, INI or XML. Environment variables and user secrets. Getting configuration to your code. Options pattern. Adding your own configuration provider.

Logging
Choosing from different logging providers. Understanding logging scopes. Using NLog. Logging guidelines and recommendations.

OWIN and Middleware
The OWIN specification. Project Katana. Building your own middleware.

ASP.NET Core and MVC
Web UI and Web API Unification. MVC routing changes. Understanding _ViewStart.cshtml and _ViewImports.cshtml. More powerfull Razor with tag helpers. Building View Components. Service Injection.

Entity Framework Core
Difference with Entity Framework 6. Scaffolding your project from an existing database. Generated code. Interacting with the database.

Modeling your database with EF Core
Methods of configuration. Migrations. Table and column mapping. Modeling properties. Value generated properties. Using Owned Entities and Value objects. Concurrent updates. Modeling relationships.

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

Blazor
Introducing Blazor. Client-Side vs. Server-Side Blazor. Creating a simple Blazor Component. Hosting Blazor. How does it work?

Building REST Services with ASP.NET Web API

2 days **UWAPI**

10 - 11 October 2019
18 - 19 December 2019
20 - 21 February 2020
16 - 17 April 2020
15 - 16 June 2020

Learning Goals
ASP.NET Web API is built up from the ground to alleviate REST development in both .NET Framework and Core.

Target Audience
Participants of this course need to have a solid understanding of .NET using either C# or VB.NET.

The HTTP Protocol
Http Verbs. Headers. Status Codes. Redirection. Caching.

REST
The State of the Web. How REST works. REST versus SOAP.

Introducing ASP.NET Web API
Architecture. CRUD operations. Feature Overview.

Consuming an ASP.NET Web API REST service
Consuming with a .NET Client: HttpClient. Serialization and Deserialization in .NET. Consuming data using jQuery AJAX and the fetch api.

ASP.NET Web API Routing
Convention-based routing. Routing Attributes. Routing Errors.

ASP.NET Web API Controllers
The ApiController and .NET Core ControllerBase Class. Action Methods. Understanding I(Http)ActionResult. Using the new ProblemDetails class for error reporting. Filters. Using Open API to expose meta-data about your Web API.

Content Negotiation with ASP.NET Web API
Media types. Built-in Content Negotiation. Custom Formatters.

OData Overview
What is ODATA. ODATA formats. Developing with ODATA. Client and Server. Querying ODATA services.

Building OData REST Services with ASP.NET Web API
Building an ODATA service in .NET Core and .NET Framework. Creating the Controller. Configure Web API. Adding Features.

Consuming OData REST in .NET
ODATA Service Proxy. MetaData. Querying ODATA services. Modifying data. Actions.

Model Validation
Model binding. The Modelstate. Validation Attributes. Returning validation errors. Customizing validation output with the InvalidModelStateResponseFactory class.

Securing your Web API service
Authentication & Authorization. Authorization Attributes. Authentication in HTTP. Authentication Options. Cross-Site Request Forgery.

Building Single Page Applications with Blazor NEW

2 days **UBLZ**

28 - 29 October 2019
16 - 17 January 2020
02 - 03 April 2020
04 - 05 June 2020

Learning Goals
Blazor is a new Microsoft Framework for building SPAs. Unlike frameworks like Angular and React, Blazor allows you to do this using C# and the .NET framework!

Target Audience
This training requires basic knowledge about HTML, C# and ASP.NET.

Introduction to WebAssembly and Blazor
Building Rich Web Experiences, Past, Present and Future. Introducing Web Assembly. Web Assembly and Mono. Getting Started with Blazor – Easy! Client Side vs. Server Side Blazor. Blazor Features Overview. Installing Blazor Prerequisites. Generating your project with Visual Studio or Code. Examining the solutions and its projects.

Your First Blazor Project
Installing Blazor Prerequisites. Generating your project with Visual Studio or Code. Examining the solutions and its projects. A Quick Look at Razor. One Way Data Binding. Event Handling and Data Binding. Two Way Data Binding. Reporting Changes. Forms and Validation.

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. Building a Component Library. Styling Components. Lifecycle Hooks.

Services and Dependency Injection
What is Dependency Inversion? Adding Dependency Injection. Configuring 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 Core? Generating the Database with Code First. Testing your Microservice.

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.

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.

Developing & Deploying Web Apps on Microsoft Azure

4 days **UAWEB**

07 - 10 October 2019
25 - 28 November 2019
27 - 30 January 2020
23 - 26 March 2020
25 - 28 May 2020

Learning Goals
This 4-day training is designed to get developers up to speed with designing, developing, hosting and managing web applications using Microsoft Azure. You will learn what can be accomplished with the different tools and services, relevant to web development, offered by Microsoft Azure. Participants will leave the training with all the technical knowledge and guidelines to use Microsoft Azure in a productive, efficient and maintainable way.

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.

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. Azure Components. Deployment options: Azure App Services, Cloud Services and Virtual Machines.

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
Using the Web Site Gallery. 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
The advantages of storing data in the cloud. Microsoft Azure storage concepts. Storing your website files in Azure Blob Storage. 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.

App Services: API Apps
Extending your Azure Web apps and mobile apps with API apps. Expose metadata with Swagger. Auto-generate an SDK for your API App.

Azure SQL Database
Azure SQL Database feature set. Designing an Azure SQL Database. Connecting your apps with Azure SQL Database. Migrating data to Azure SQL Database.

Azure Functions
Serverless Azure Functions. Function triggering options. Integrating with other Azure services. Sending triggers from your website via Azure Storage Queues.

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

Securing your applications and API with Azure Active Directory
Identity management in the cloud. User and group management. Registering your applications. Using the Active Directory Authentication Library (ADAL) / Microsoft Authentication Library (MSAL). Implement role based security into your applications.

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.

Storing non-relational data in CosmosDb
What is CosmosDb? The DocumentDb API. Query Syntax. User Defined Functions, Triggers and Stored Procedures. The MongoDb API. The Graph API. The Table API. CosmosDb Tools.

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.

Deployment with Visual Studio Team Services
Automatic Deployment to Azure. Performance and Load Testing. Continuous Integration: Build, Validate and Deploy.

Team Development with Azure DevOps

3 days **UTFS**

12 - 14 November 2019
20 - 22 January 2020
23 - 25 March 2020
18 - 20 May 2020

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. You will perform project management, source control (no real coding skill required for the exercise), testing and build automation with Azure DevOps.

Target Audience
.NET developers, project managers, testers and anyone who is involved in application development. Exercices don't require real coding skills as they are for illustrating the workflow with Azure DevOps.

Azure DevOps Services
Azure DevOps: The big picture. Features. Architecture. The Extensions Marketplace. LAB: Register for an Azure DevOps Account.

Azure DevOps Team Projects
Development Processes. Team Projects and Process Templates. LAB: Creating and configuring your team project.

Project Management with Azure Boards
Iterative Development. Creating the project backlog. Work Items and Queries. Velocity and Forecasting. LAB: Create your project backlog.

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. LAB: Planning the next sprint.

Running the sprint
Running a sprint. The daily standup meeting. Burndown chart. Team dashboard. LAB: Starting the sprint.

Storing Developer Assets in Azure Repos
Version Control concepts in Visual Studio Team Services. Distributed Source Control with Git. Creating a local repository. Cloning a remote repository. Staging files. Committing files. Adding branches to your workflow. Merge vs. Rebase. Synchronizing with a remote repository. Pull Requests. LAB: Working with Git.

Keep the Quality of Your Product High with Testing
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? MSUnit - Built into Visual Studio. Live unit testing with Visual Studio 2017. LAB: Unit Testing.

Continuous Integration and Deployment with Azure Pipelines
What is Team Build? Doing Continuous integration. Creating Build processes with the new componentized build. Release management and continuous deployment. Release definitions. Approving releases. Agents. Setting up your own build server. LAB: Setting up a build definition and deploying with a release definition.

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. LAB: Acceptence testing your application.

Developing Microservices with Containers, Kubernetes and Microsoft Azure

3 days **UAMIC**

09 - 11 December 2019
03 - 05 February 2020
30 March - 01 April 2020
02 - 04 June 2020

Learning Goals
A Container is a new 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 Windows and Azure.

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

Docker
Docker Terminology. Docker Engine on Windows Server/Windows. Containers, Images and Registries. Docker Volumes en Services. Docker Swarm.

Add ASP.NET Applications to Containers
.NET or .NET Core? Official .NET Docker containers. Working with Databases. Migrating existing applications.

Azure for Container Overview
Azure Container Registry. Hosting Containers: Container Instances, Container for Web Apps, AKS. Service Fabric. Azure 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
Pods, Services, Deployments, Nodes. Kubectl. Communication. Scaling and Updates. Health Monitoring.

Azure Container Service (AKS)
Putting a Kubernetes Cluster in Azure. AKS Features. Using Helm Charts. Using Draft to Effiently Create, Push and Deploy your Code.

Azure Dev Spaces
Debugging in AKS. How to set up Dev Spaces. Client-side Tooling. Using Multiple Dev Spaces. Routing.

API Gateways
API Gateways. Kubernetes Ingress. Azure API Management.

Asynchronous Communication
Communication Patterns. Event-Based Communication. Event Bus. Integration Events. Eventual Consistency.

Azure Service Bus
Service Bus Queues. Service Bus Topics and Subscriptions. Actions for Topics/Subscriptions. Storage Queues versus Service Bus Queues.

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

Developing Intelligent Solutions with the Microsoft AI Platform

3 days **UADAI**

14 - 16 October 2019
16 - 18 December 2019
24 - 26 February 2020
27 - 29 April 2020
29 June - 01 July 2020

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
This course targets professional developers that want to get started with the Microsoft AI platform. 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. Middleware. Deploying with the Azure Bot Service.

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.

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 Studio
Working with Datasets. Data Preparation. Exploring modelling techniques. Training and evaluating models. Exposing the model as a webservice.

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

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.

IoT with Windows 10 and Microsoft Azure

2 days **UIOT**

Terminals, Sensors, Devices, ... The world is swarming with devices connected through the internet. With Windows 10 for IoT and the Microsoft Azure platform a new world opens up for .NET developers. In this course we will see how to create applications for "Internet of Things" devices running Windows 10 and how they benefit from the power of the Microsoft Azure cloud. Details see www.u2u.be/cc/uiot.

Microsoft Azure Infrastructure Services & Azure AD

5 days **UAZUREA**

30 September - 04 October 2019
09 - 13 December 2019
20 - 24 January 2020
09 - 13 March 2020
04 - 08 May 2020
22 - 26 June 2020

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). Azure Products Overview. SLA and Pricing. Azure Deployment Models: Classic versus Resource Manager.

Azure Management
Azure Portal. Managing Azure with PowerShell. Cloud Shell. Roll-Based Access Control.

Azure Storage
Azure Storage Types. Storage Accounts. Creating a Storage Account. Access to Storage.

Azure Networking
Virtual Network. VNet Peering. VPN Gateway. ExpressRoute. Azure DNS.

Azure Virtual Machines
VM Overview. VM Sizes. VM Storage. VM Networking. VM Availability. Create VMs. VM Scale Sets.

Azure Load Balancing
Azure Load Balancer. Application Gateway. Web Application Firewall. Traffic Manager.

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

Azure Resource Manager Templates
Resource Manager Overview. ARM Templates Overview and Syntax. Authoring Templates with the Portal and Visual Studio Code. Template Functions. Deploy Resources with Templates.

Azure Active directory
Azure AD Overview. Azure AD Editions. Add your domain to Azure AD. User and Group Management. Access to SaaS Applications. Azure AD Business to Business.

Azure AD Sign-In Options
Azure AD Connect. Directory Synchronization. Password Synchronization. Pass-Through Authentication. Seamless Single Sign-On. Federation.

Azure AD Domain Services
Azure AD Domain Services Overview. AAD DS Features and Benefits. AAD DS Deployment Scenarios. AAD DS Configuration.

Azure AD Services
Multi-Factor Authentication. Azure AD Application Proxy. Azure Information Protection. Azure AD Business to Consumer.

Microsoft Azure Active Directory Identity Management

2 days **UAAD**

As companies add more cloud services to their IT environments, the process of managing identities is getting more complex. Admins must develop sound policies around role-based access. They must grant rights to users who need information to get work done. And they must be able to automatically take away those privileges when people leave the company or change roles.
Azure Active Directory is an identity and access management cloud solution that provides a set of capabilities to manage users and groups. Azure AD also helps secure access to applications such as Microsoft online services (Office 365, Azure, Windows Intune, Dynamics CRM Online) and a world of non-Microsoft SaaS applications.
Azure AD can be integrated with on-prem Active Directory deployments to simplify user management and provide Single Sign-On. Multi-factor authentication prevents unauthorized access to both on-premises and cloud applications by providing an additional level of authentication.
In the end, Azure AD will simplify user access to thousands of cloud applications from Windows, Mac and iOS devices.
Details see www.u2u.be/cc/uaad.

Mobile Workforce Management with Microsoft Intune NEW

2 days **UINT**

30 - 31 October 2019
06 - 07 February 2020
26 - 27 March 2020
18 - 19 May 2020

Learning Goals
Microsoft Intune is a cloud-based service allowing you to manage the PCs, mobile devices and mobile apps your workforce uses to access company data. At the same time it ensures that all devices and apps are compliant with the company security requirements.

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

Intune Overview
Intune Overview. Mobile Device Management. Mobile App Management. Azure Active Directory. Role-Based Administration Control (RBAC). MDM Authority.

Device Enrollment
Enrollment Methods for Windows, Android and iOS. Enrollment Options. Enroll Windows Devices. Enroll Android Devices. Enroll iOS Devices.

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.

App Management
Add apps to Intune. Deploy apps to Groups. Monitor apps and app Assignments. App Configuration Policies. Wipe apps.

Device Configuration
Configure Device Profiles. Configure Device Features. Configure Device Restrictions. Configure Settings: Email, VPN, Wi-Fi.

Device Policies
Device Compliance Policies. Configure Conditional Access. Protect app and Device Data. App Protection Policies.

Windows Information Protection
Enterprise Data Control. WIP Protection Modes. Create WIP Policy with Intune.

Windows Autopilot
Benefits of Windows Autopilot. Deployment Scenarios. Administering Windows Autopilot.

Managing Containers with Kubernetes and Microsoft Azure NEW

2 days **UACON**

07 - 08 October 2019
18 - 19 December 2019
24 - 25 February 2020
29 - 30 April 2020

Learning Goals
This course starts by covering the Docker technology. You will learn about the Azure Services that help you to run and implement containers like Azure Container Instances and Azure Web apps for Containers. Finally, the training will make you familiar with Kubernetes.

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. Windows Containers. Linux Containers on Windows. Container Fundamentals.

Docker
Docker Overview. Deploying a Container Host. Docker Commands. Container Networking. Dockerfile. Docker Hub. Docker Compose. Docker Swarm.

Applications in Containers
.NET Core versus .NET Framework. Migrate Existing Applications. Databases and Containers. Software Architecture Evolution. Microservices.

Azure for Containers Overview
Azure Container Registry. Azure Container Instances. Web App for Containers. Azure Container Service.

Kubernetes Overview
Kubernetes Overview. Kubernetes Objects: Pods, Nodes, Services. Kubernetes Networking. Setup of a Kubernetes Cluster. Kubectl.

Managing Containers with Kubernetes
Pods. Services. Deployments. Communication. Scaling. Monitoring and Updating.

Azure Kubernetes Service (AKS)
Create AKS Cluster. Access and Identity Options. Security. Networking.

Microsoft Azure Operations Management NEW

3 days **UAOM**

09 - 11 October 2019
03 - 05 February 2020
14 - 16 April 2020
29 June - 01 July 2020

Learning Goals
Operations Management Suite (OMS) is a collection of management services in the cloud. Rather than deploying and managing on-premises resources, OMS components are entirely hosted in Azure.

Target Audience
This course is intended for IT professional technical specialists responsible for managing, monitoring and securing an Azure environment.

Operations Management Overview
Azure Management: Monitor - Configure - Govern - Secure - Protect - Migrate. Workspaces. Pricing. Connecting Machines.

Azure Automation
PowerShell Desired State Configuration. Azure Runbooks.

Azure Update Management
OMS Agent for Windows and Linux. Data Collection and Update Assessments. Create Update Deployment. Install Updates.

Azure Backup
Recovery Services Vault. Backup Policies. Azure VM Backup. Azure File Share Backup. Windows Server Backup. Azure Backup Server. Backup SQL Database in Azure VM.

Azure Site Recovery
Site Recovery Overview. Azure to Azure Replication. Replication of Hyper-V virtual machines to Azure. Replication of VMware virtual machines to Azure. Recovery Plans.

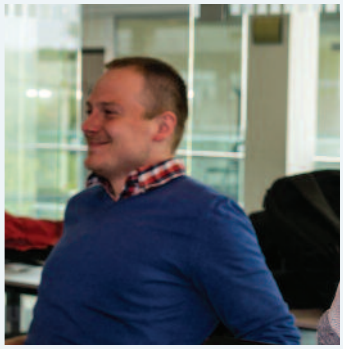
Azure Migration Center
Virtual Machine Migration. Database Migration.

Azure Monitoring and Log Analytics
Service Health. Azure Advisor. Azure Monitor. Metrics and Alerts. Azure Activity Log. Application Insights. Network Monitoring. Log Analytics.

Azure Security
Azure Security Center. Configure Security Policies. Protect Your Resources. Respond to Incidents. Just in Time VM Access. Adaptive Application Controls. File Integrity Monitor.

Azure Governance
Management Groups. Azure Policy. BluePrints. Cost Management. Resource Graph.





Microsoft Azure Big Data for Data Engineers NEW

3 days **UADE**

14 - 16 October 2019
09 - 11 December 2019
24 - 26 February 2020
20 - 22 April 2020
15 - 17 June 2020

Learning Goals
This training focusses of how to upload, transform and manage large volumes of data in the Azure cloud.

Target Audience
This course focusses on developers, BI developers and project managers.

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

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

Using Azure Data Factory for ETL
Data Factory V2 terminology. The Data Factory wizard. Developing Data Factory pipelines. Creating Data Factory Data flows. Setup of Integration Runtime. Debugging, scheduling and monitoring DF pipelines.

Azure Data Warehouse
Architecture. Loading data via PolyBase. CTAS and CETAS. Setting up table distributions. Indexing. Partitioning. Performance monitoring and tuning.

Advanced data processing with Databricks
Introduction Azure Databricks. Cluster setup. Databricks Notebooks. Connecting to Azure Storage and Data Warehouse. Processing Spark Dataframes in Python. Using Spark SQL. Scheduling Databricks jobs.

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.

Data Science with Python on the Microsoft Azure Platform NEW

2 days **UADS**

17 - 18 October 2019
12 - 13 December 2019
27 - 28 February 2020
23 - 24 April 2020
18 - 19 June 2020

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.

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
Introducing the matplotlib package. Using pyplot. Enriching plots: Title, axis and legend. Visualizing images. Additional visualization packages.

Machine learning introduction
Which questions can machine learning answer? Machine learning methodology. Data preparation. Classes of machine learning algorithms. Model evaluation.

Machine Learning with scikit-learn
Machine learning specific data preprocessing. Overview of the scikit-learn library. 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.

Data Engineering and AI on the Microsoft Azure Platform NEW

5 days **UADATA**

This 5-day training combines the 3-day training UADE: “Microsoft Azure Big Data for Data Engineers” and the 2-day training UADS: “Data Science with Python on the Microsoft Azure Platform”. Details see www.u2u.be/cc/uadata.

Implementing Azure SQL Databases

2 days **UASQL**

07 - 08 November 2019
06 - 07 February 2020
29 - 30 April 2020

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 2-day course is intended for existing 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. Working with the Azure Management Portal.

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

Developing Azure SQL Databases
Creating tables, views, stored procedures, ... Migrate an existing SQL Server database. Exporting and Importing BACPAC files of a SQL Database. Copy an Azure SQL Database.

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

Scaling Azure SQL Databases
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.

Securing user access to Azure SQL databases
Authentication overview. Configuring Authentication. Configuring Authorization. Creating Logins and Users. Working with contained databases.

Monitor an Azure SQL database
Configuring Database Auditing. Azure SQL Database threat detection. Working with Extended Events.

Backup, Restore and High Availability
Business Continuity overview. Backup of an Azure SQL database. Restoring an Azure SQL database. Geo-Restore of an Azure SQL database. Geo-Replication of Azure SQL databases.

Azure Machine Learning Studio

2 days **UAML**

In this two-day course we walk through the main tasks a data scientist needs to do to turn data into a useful model for predicting future events using Azure Machine Learning Studio. We focus on loading data into the environment, inspect the data, clean and improve the data for the mining process, test multiple modeling techniques against this, compare the results and put the best model into production. Student will be able to access their data in Azure Machine Learning Studio, prepare the data for modeling, learn how to test and compare different modeling techniques and put these models in production via web services. Details see www.u2u.be/cc/uaml.

JavaScript Fundamentals

3 days **UJSDEV**

02 - 04 October 2019
20 - 22 November 2019
22 - 24 January 2020
18 - 20 March 2020
13 - 15 May 2020

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 Traspilers like Babel and TypeScript. Tools for Code Quality.

Browser Interaction with jQuery
The jQuery Ecosystem. Querying with CSS selectors. Generating HTML. Setting Attributes and Properties. Styling from Code. Dealing with Forms. Event handling with jQuery. Comparing jQuery with other UI libraries.

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.

Programming with JavaScript, jQuery, HTML and CSS

5 days **UJSWEB**

30 September - 04 October 2019
18 - 22 November 2019
20 - 24 January 2020
16 - 20 March 2020
11 - 15 May 2020

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 Basics
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 Essentials
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, float. Positioning elements. 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 Traspilers like Babel and TypeScript. Tools for Code Quality.

Browser Interaction with jQuery
The jQuery Ecosystem. Querying with CSS selectors. Generating HTML. Setting Attributes and Properties. Styling from Code. Dealing with Forms. Event handling with jQuery. Comparing jQuery with other UI libraries.

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.

Building modern web sites with JavaScript libraries

3 days **UJSLIB**

07 - 09 October 2019
16 - 18 December 2019
17 - 19 February 2020
14 - 16 April 2020
22 - 24 June 2020

Learning Goals
The world of web development keeps expanding. This training will keep you up to date with all the cool Frameworks and libraries.

Target Audience
Professional web developers who are familiar with JavaScript and HTML.

Introducing Node.js
Why Node.js? Event-driven and non-blocking execution environment. Understanding and using asynchronous control flows. CommonJS Modules. Installing external modules with the Node Package Manager. Using Express.

Automating tasks with Gulp
Running tasks with Gulp. Understanding Globs. Gulp primitives. Some examples.

Write easier and more maintainable CSS with SASS
SASS, the dynamic stylesheet language. Compiling SASS into CSS. Defining variables and types. Using nested rules and properties. Using partials, extend, mixins and functions.

Responsive web design with Bootstrap
Normalizing and resetting. The Grid System. Utility classes. Base Bootstrap CSS. Customizing look and feel. Components: navigation, popovers...

Bundling with Webpack
Using and Running Webpack. Working with Multiple Entries and Outputs. Loaders. Plugins.

Unit Testing with Jasmine and Karma
Challenges for testing. Writing testable code. Common scenarios. Karma configuration. End to end testing.

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 Backpressure.

Component based development with React
MVC-pattern. React Components. JSX. The Virtual DOM. Databinding. SPA with React.

Strongly typed JavaScript with TypeScript
Writing application scale JavaScript. Type safe JavaScript development with TypeScript. Implementing Types, Interfaces, Classes and Inheritance. Namespaces and Modules.

Developing web apps with React

3 days **UREACT**

23 - 25 October 2019
09 - 11 December 2019
16 - 18 March 2020
18 - 20 May 2020

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.

What is React
The Evolution of Web Development. Components Everywhere. The React Tooling Kit.

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

Components
Components are State Machines. How does component state work. Interactivity. Multiple (child) components. Transferring Props. Form Components.

Component Lifecycle and Performance
Component Lifecycle. Lifecycle Methods. Loading Data into a component. React's Virtual DOM. Tweaking Performance. Using PureComponent for extra performance gains.

Structuring a React Application
Create a design. Make components for every part. Fill up the design with a static version. Add interaction to your application.

React In-Depth
Refs. Ref Callback. Property Types.

Component Composition
Imperative vs Declarative in React. Compound Components with cloneElement. Compound Components with Context. Higher Order Components. Render Props. Controlled Components.

SPA with React
Towards Single Page Applications. Introducing React Router. Nested Routes. Advanced Usage.

Redux
What is Redux? Actors. Tools.

Asynchronous Actions with Redux
Asynchronous Actions. Middleware.

Jest and React
What is Jest? Creating tests with Jest. Asynchronous Methods. Mocking. Testing React components using snapshots.

React Native
What is React Native? How do I use it?

Mobile Development with React Native NEW

2 days **UREACTN**

21 - 22 October 2019
23 - 24 January 2020
05 - 06 March 2020
29 - 30 April 2020
25 - 26 June 2020

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 posess.

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.

React Building Blocks
JSX: write HTML in your javascript. Using Components to piece your app together. Adding interactivity with State and Props. introduction to Hooks.

Getting started
Building our first page. Adding application state. Reacting to user input.

Layout and Styling
Flexbox recap. The React Native Styling system. Using Scrollview and Listview. Adding Animations to enhance User Experience.

Routing and Navigation
Introducing React Navigation. Tab Navigation. Drawer Navigation. Using Multiple Navigators.

Storage and Networking
Loading local recsources with AsyncStorage. Fetching Remote resources and data.

Building web apps with Angular and TypeScript

3 days **UANG**

12 - 14 November 2109
16 - 18 December 2019
03 - 05 February 2020
23 - 25 March 2020
11 - 13 May 2020

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. Angular Core and Modules. TypeScript, Dart, Plain Old JavaScript.

Strongly Typed JavaScript with TypeScript
Writing Application-Scale JavaScript. Type-Safe JavaScript Development with TypeScript. 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

3 days **UANGA**

27 - 29 November 2019
20 - 22 January 2020
16 - 18 March 2020
18 - 20 May 2020

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 8.

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. Subjets. Cold versus Hot Observables. Making Async Calls. Combining Observables. Error Handling. Dealing with Backpressure.

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 preboot.

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.

Microsoft SharePoint Online for Power Users

5 days **USPOP**

30 September - 04 October 2019
18 - 22 November 2019
13 - 17 January 2020
24 - 28 February 2020
20 - 24 April 2020
08 - 12 June 2020

Learning Goals
SharePoint Online, part of Office 365, contains a rich set of features and functionalities that allow 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 and build powerful collaboration and communication environments incorporating Office 365 Groups, PowerApps, Flow ... using the browser and the Office clients.

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.

Positioning SharePoint Online and Office 365
Understanding Office 365. Office 365 Licensing. SharePoint Online feature overview. Overview of other Office 365 Services.

Discovering SharePoint sites
What is a SharePoint Site? SharePoint Site Creation. Classic vs Modern Sites. Configuring Sites.

Modern SharePoint sites
Modern Team Sites. Office 365 Groups. Communication Sites. Integrating connectors. Site Designs.

Building Modern Collaboration & Intranet Environments
What is a Site Collection? What is a Hub Site? Hub Sites Shared configuration. Content aggregation. SharePoint look book and site designs. SharePoint Home Site.

SharePoint Content Management
Fundamentals of Apps, Lists and Libraries. Discovering a Custom List, Document Library and Contacts. 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. Browsing the SharePoint App Store. Installing and Working with SharePoint Apps.

SharePoint Content Types
Providing reusable metadata with site columns and content types. Content Type guidelines. Associating templates to content types.

Document Management
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.

Working with Pages
Working with site pages. Enriching your pages with web parts. Authoring and publishing a Site Page. Using pages as news. Page approval. Navigation best practices. Changing the theme.

User Management & Permissions
SharePoint site security architecture. Simplified access with Site Owners, Site Members and Site Visitors. Configuring Site Permissions and Group Membership. Sharing content with internal and external users. What are the available Sharing Options?

External Sharing
External Sharing in SharePoint Online. Sharing Options. Guest Access.

Enterprise Content Management
Metadata at enterprise level with the Managed Metadata Service. Terms and TermSets. Publishing of Enterprise Content Types.

SharePoint Search
Search query syntax. Working with Result Sources. Managing the Search Schema. Configuring Result Sources, Query Rules, Result Types, ... Microsoft Search.

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

Microsoft PowerApps
What is Microsoft PowerApps? Building PowerApps from a template. Extending PowerApps with formatting, validation, events, ... Making a PowerApp available to your users. Building custom SharePoint list views with PowerApps. Customizing list edit forms with PowerApps.

Microsoft Flow
What is Microsoft Flow? Building flows using the browser. Working with approvals. Microsoft Flow mobile application. Using out-of-the-box flows in SharePoint Online. Setting up flows for your lists and libraries.

OneDrive for Business
Store Work Files in OneDrive for Business. OneDrive Mobile Apps. Synchronize your documents with different devices. Different Sync Clients.

Microsoft Teams
Chat-based Workspace. A Hub for Teamwork. Teams versus Office 365 Groups. Desktop, Mobile and Web Teams Client. Channels.

Microsoft SharePoint Online Technology Overview

2 days **USPOT**

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.



What's new in SharePoint Server 2019 NEW

1 day **USP19U**

22 November 2019
06 March 2020
03 July 2020

Learning Goals
This course will provide you with an extensive overview of all new functionalities in SharePoint Server 2019.

Target Audience
This course targets at anyone working with SharePoint Server 2013 or 2016.

What's new and deprecated in SharePoint Server 2019
Deprecated and deleted features. Modern Experience. SharePoint Framework.

Modern Sites
New self-service site creation experience. Modern Team Sites. Communication Sites. Hub Sites.

Modern Content Management
SharePoint Home. Modern lists and libraries. Modern sharing experience. Modern search experience. SharePoint Site Pages. Site Usage. Recycle bin experience.

Modern Sharing
Modern sharing experience.

Modern Pages
Working with modern site pages. Enriching your pages with new web parts. Authoring and publishing a Site Page. Using pages as news. Navigation best practices. Changing the theme.

Upgrading to SharePoint Server 2019
Upgrade Requirements. Plan and prepare migration. DB Attach. Upgrade Content Databases, My Sites and Service Applications. Upgrade site collections to SharePoint Server 2019.

Overview of Hybrid scenarios
Preparing for Hybrid. Hybrid Picker / Configuration Wizard. Hybrid Features.

Microsoft SharePoint 2016/2019 for Power Users

5 days **USP19P**

07 - 11 October 2019
09 - 13 December 2019
03 - 07 February 2020
06 - 10 April 2020
08 - 12 June 2020

Learning Goals
U2U offers 3 different versions of this course targeting SharePoint Server 2013, 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.

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

Overview of SharePoint Server 2019

Discovering SharePoint sites
SharePoint Architecture. Sites vs Site Collections. Classic vs Modern sites. SharePoint Home. SharePoint Modern Team Site. Discovering other site templates.

SharePoint Content Management
Basics of Apps, Lists and Libraries. Discovering different list templates. Working with metadata and different column types. Creating new views. Creating new Content Types. Content Type guidelines.

SharePoint Store Apps
Browsing the SharePoint App Store. Installing and Working with SharePoint Apps.

Changing, customizing and branding SharePoint Sites
The SharePoint App Launcher and Ribbon. Modern Site Pages. Providing content on your site pages. Wiki Pages and Web Part pages. Working with Web Parts. Different types of Navigation. Changing the theme of your site.

Document Management
Keeping track of different versions. Configuring check-out and approval. Grouping documents in Document Sets. Receive email Alerts. Co-Authoring on Office documents. Recycle Bin.

User Management & Permissions
SharePoint Permissions and Permission Levels. Granting access at site and library level. Working with users, domain groups and SharePoint groups. Breaking permission inheritance. Sharing your content with your colleagues.

Using and building custom workflows
Using the out-of-the-box workflows. Creating new workflows with SharePoint Designer 2013 and Visio.

Enterprise Content Management
Metadata at enterprise level with the Managed Metadata Service Terms and TermSets. Publishing of Enterprise Content Types. Moving Documents with Send To. Classifying documents with the Content Organizer. Record Management. Policies: Auditing, Expiration, Data Loss Prevention and Document Deletion.

SharePoint Search
Search query syntax. Configuring the Search Engine. Working with Result Sources. Defining and using managed properties. People Search. Query Rules. Search web parts. Result Types.

Web Content Management: Publishing Pages
Publishing Sites vs Team Sites. Publishing of a Publishing Page. Principals of Publishing Pages. Using and creating Page Layouts. Creating Page Layouts with the Design Manager. Device Channels.

Communication Sites
Building Portals with SharePoint Communication Sites. Benefits of SharePoint Communications Sites. Working with Site Designs and Column Layouts. Adding outstanding designs with the Hero Web Part. Managing and Publishing Content.

Working with Business Connectivity Services
Overview of the BCS architecture. Creating External Content Types. Connecting to databases and OData services. Working with External Lists to support CRUD operations on your data in SharePoint. Integrating external data in Outlook.

SharePoint Social Features
SharePoint Newsfeeds. Managing your SharePoint User Profile. Using OneDrive for Business.

Microsoft PowerApps
What is Microsoft PowerApps? Building PowerApps from a template. Customizing PowerApps with formatting, validation, events, ... Making PowerApps available to your users. Integrate PowerApps in SharePoint.

Microsoft Flow
What is Microsoft Flow? Building flows using the browser. Microsoft Flow mobile application. Using Microsoft Flow from within SharePoint.

Administering Microsoft SharePoint Server 2013/2016/2019

5 days **USP19A**

25 - 29 November 2019
17 - 21 February 2020
04 - 08 May 2020

Learning Goals
This course will provide you with the knowledge and skills to install, configure, manage and maintain a Microsoft SharePoint Server 2013/2016/2019 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.

Target Audience
The course is targeted at experienced IT Professionals.

Overview of SharePoint 2013/2016/2019
SharePoint Overview. SharePoint 2013/2016/2019 vs SharePoint Online. Feature Overview. SharePoint Roles and Tools.

Installing SharePoint Server 2013/2016/2019
SharePoint Farm and Server Roles. Installation Requirements. Installing SharePoint Server. Configure Farm Settings. MinRole.

SharePoint Logical Architecture
Logical Architecture. Site Collections. Web Applications. Application Pools. Limits and Boundaries.

SharePoint Service Applications
Architecture, Configuration & Management. Proxies & Proxy Groups. Cross farm Service Applications Publishing.

Managing Users and Permissions
Security Architecture: Users, AD Groups, SharePoint Groups, Permission Levels & Assignments. Permission Inheritance. Sharing Feature. Web Application Policies.

Authentication in SharePoint 2013/2016/2019
Authentication Mechanisms: Classic Mode vs Claims based Authentication. Authentication Methods: Anonymous, Basic, NTLM, Kerberos, Forms-Based & SAML. Working with external Identity Providers: ADFS, Azure Active Directory...

Managing Solutions in SharePoint 2013/2016/2019
SharePoint Features. Deploying Farm Solutions. Managing & Monitoring Sandbox Solutions.

Managing Apps in SharePoint 2013/2016/2019
App Model Fundamentals. Configure the Farm for Apps. App Deployment. App Permissions.

User Profile Service
User Profile Service Application. User Profile sync options: AD import vs User Profile Synchronization. My Sites Configuration. Microsoft Identity Manager.

Enterprise Search
Introduction to Search. Search Architecture. Search Topology. Search Configuration. Crawl and Content Configuration. Query Configuration. Search UI Configuration: Managed Properties, Result Sources, Query Rules, Result Types...

Hybrid Deployment
Configuring a Hybrid environment with SharePoint Online. Directory Synchronization with Azure AD Connect. Hybrid OneDrive for Business. Integrating Delve with Profile Redirection. Hybrid Sites. Hybrid App Launcher. Hybrid Search.

Upgrading to SharePoint 2013/2016/2019
Upgrade Requirements. Upgrade Methods: In Place Upgrade vs DB Attach. Upgrade Process. Deferred Site Collection Upgrade. Site Collection Modes.

Maintaining SharePoint 2013/2016/2019
Monitoring Tools. Request Management. Database Configuration. SharePoint Caching: Blob, Output & Object Cache.

Developing with the SharePoint Framework

5 days **USPFX**

18 - 22 November 2019
20 - 24 January 2020
23 - 27 March 2020
25 - 29 May 2020

Learning Goals
SharePoint Framework or SPFx is a client-side development model that allows us to create modern SharePoint experiences. It is available on SharePoint Online, SharePoint 2019 and on SharePoint 2016 as part of a Feature Pack. This course will teach you the skills to customize 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 SharePoint 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.

Node modules
Npm modules. 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. Namespaces and Modules.

Web part properties
Changing 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 list subscriptions to receive updates (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's 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.

Connecting to Microsoft Graph
Microsoft Graph API. The Graph API Client. Consuming Microsoft Graph. Registering and approving permissions to access Microsoft Graph. Isolated Web Parts.

Consuming AzureAD protected API's
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 priviliges 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.

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.

Modern Development with SharePoint 2019

4 days **USP19AP**

04 - 07 November 2019
13 - 16 January 2020
16 - 19 March 2020
11 - 14 May 2020

Learning Goals
With the introduction of SharePoint Online in Office 365, creating your own server-side code is no longer recommended. If you want to support both SharePoint on-prem and SharePoint online and develop in a future-proof way, you need to switch to client side options and remote provisioning techniques. This course will teach you about all the available techniques and technologies.

Target audience
This training is targeted at developers. No prior development knowledge on SharePoint is required, having a user-experience with these products is beneficial.

Introduction to SharePoint and Office 365 development
Office 365 services. SharePoint 2013 vs SharePoint 2016 vs SharePoint Online development options.

Client side development using CSOM
Getting started with CSOM. Authentication with CSOM. Code efficiency with CSOM. Administering your tenant with CSOM.

REST/OData
Getting started with the REST APIs. Authentication with REST APIs. OData querying syntax. Batch processing. The need for digest tokens.

JavaScript Client Side Development
Getting JSOM loaded in your application. Working with SP.SOD. Basic operations with JSOM. Performance and caching. Embedding options. Using promises and deferred execution. The future of JSOM.

Introduction to the Add-in model
How did we get to the add-in model? How is the add-in model being used today?

SharePoint Hosted Add-ins
SharePoint add-in hosting options. Visual Studio Project Templates. The anatomy of the project. SharePoint Add-in Package.

Provisioning artifacts
The SharePoint add-in web. Discovering SharePoint Content Management artifacts: Lists, Content Types, Columns... Extending the ribbon with Custom Actions. Provisioning artifacts to the host web.

Building Provider-hosted SharePoint Add-ins
Tenant isolation. The Cross Domain Library. Branding your SharePoint Add-in with the Chrome Control and the SharePoint Stylesheets.

Add-in Authentication
User Authentication. 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.

Remote Event Receivers
Developing Remote Event Receivers. Using Remote Event Receivers to deploy artifacts. Upgrading add-ins for SharePoint with RER.

Deploying your SharePoint Add-ins
Application registration in on-premises and in Office Store. Client IDs and Client Secrets. Publishing the remote parts. Publishing the SharePoint add-in package.

Introduction to Remote Provisioning
Why do we need (remote) provisioning? Remote provisioning techniques.

Introduction to PnP
What is PnP and how can it help me? 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 Timer Jobs
Why do we need something like remote timer jobs? Using the timer job framework from PnP. Publishing your timer jobs.

Remote provisioning model using PnP
Introduction to the Remote Provisioning engine in PnP. Using the PnP provisioning schema. Creating and using PnP provisiong templates.

Introduction to SharePoint Framework
SharePoint Framework overview. SharePoint Framework tools. Client Web Parts.

Modern Development with SharePoint Online and Office 365

5 days **USPOAP**

04 - 08 November 2019
13 - 17 January 2020
16 - 20 March 2020
11 - 15 May 2020

Learning Goals
The way we develop for SharePoint has changed a lot in recent years. With the introduction of SharePoint Online in Office 365, creating your own server-side code is no longer possible. If you want to support both SharePoint on-prem and SharePoint online and develop in a future-proof way, you need to switch to client side options and remote provisioning techniques. This course will teach you about all the available techniques and technologies to manage your SharePoint solutions and components.

Target audience
This training is targeted at developers. No prior development knowledge on SharePoint is required, having a user-experience with these products is beneficial.
The training is also targeted at existing SharePoint developers that have been using the Solution development approach and now want to get started with this new model.

Introduction to SharePoint and Office 365 development
Office 365 services. SharePoint 2013 vs SharePoint 2016 vs SharePoint Online development options.

Client side development using CSOM
Getting started with CSOM. Authentication with CSOM. Code efficiency with CSOM. Administering your tenant with CSOM.

REST/OData
Getting started with the REST APIs. Authentication with REST APIs. OData querying syntax. Batch processing. The need for digest tokens.

JavaScript Client Side Development
Getting JSOM loaded in your application. Working with SP.SOD. Basic operations with JSOM. Performance and caching. Embedding options. Using promises and deferred execution. The future of JSOM.

Introduction to the Add-in model
How did we get to the add-in model? How is the add-in model being used today?

SharePoint Hosted Add-ins
Introducing SharePoint Add-ins. SharePoint add-in hosting options. Visual Studio Project Templates. The anatomy of the project. SharePoint Add-in Package.

Provisioning artifacts
The SharePoint add-in web. Discovering SharePoint Content Management artifacts: Lists, Content Types, Columns... Extending the ribbon with Custom Actions. Provisioning artifacts to the host web.

Building Provider-hosted SharePoint Add-ins
Handling tenant isolation. The Cross Domain Library. Branding your SharePoint Add-in with the Chrome Control and the SharePoint Stylesheets.

Add-in Authentication
User Authentication. 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.

Remote Event Receivers
Developing Remote Event Receivers. Using Remote Event Receivers to deploy artifacts. Upgrading add-ins for SharePoint with RER.

Deploying your SharePoint Add-ins
Application registration in on-premises and in Office Store. Client IDs and Client Secrets. Publishing the remote parts. Publishing the SharePoint add-in package.

Introduction to Remote Provisioning
Why do we need (remote) provisioning? Remote provisioning techniques.

Introduction to PnP
What is PnP and how can it help me? 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 Timer Jobs
Why do we need something like remote timer jobs? Using the timer job framework from PnP. Publishing your timer jobs.

Remote provisioning model using PnP
Introduction to the Remote Provisioning engine in PnP. Using the PnP provisioning schema. Creating and using PnP provisiong templates.

Introduction to SharePoint Framework
SharePoint Framework overview. SharePoint Framework tools. Client Web Parts.

Microsoft Identity Platform
Microsoft Identity Platform overview. App Registrations. OAuth authentication flows. User authentication with Microsoft Identity Platform. Application authentication with Microsoft Identity Platform. Microsoft Authentication Libraries (MSAL).

Microsoft Graph
Discovering the different APIs: Mail, Contacts, Calendar, People, Mail... Microsoft Graph SDK. Extending the Graph with extensions.

Webhooks
Webhook subscriptions and event notifications. Microsoft Graph Webhooks. SharePoint Webhooks. Debugging Webhooks.

Azure Utilities
Using the Azure Queue. Delegate functionalities to Azure functions. Using Azure WebJobs to do repetitive things.

Microsoft PowerApps and Microsoft Flow

3 days **UFLOWP**

28 - 30 October 2019
25 - 27 November 2019
22 - 24 January 2020
02 - 04 March 2020
14 - 16 April 2020
18 - 20 May 2020
29 June - 01 July 2020

Learning Goals
In this course, participants will get familiar with the concepts of Microsoft PowerApps and Microsoft Flow. They will learn how to use these services to create custom applications 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 PowerApps or Flow is required.

Introduction to PowerApps
What is PowerApps? PowerApps components. Related technologies. Licensing and pricing conditions. PowerApps connections. App samples and templates. Introduction to PowerApps Studio. Canvas apps versus Model-driven apps.

Building Canvas apps in PowerApps
Creating canvas apps from data. Creating canvas apps from scratch. Screens and Pages. Screen components: Forms, DataCards, Controls, … Handling bindings. Versioning, publishing and sharing apps. Integrating your app in other products. App usage analytics.

PowerApps advanced features
Using functions, signals, enumerations and named operators. Using rules to trigger based on conditions. Understanding and applying data source delegation.

PowerApps for mobile
Capabilities of PowerApps App for IOS and Android.

Introduction to Flow
What is Flow? Flow building blocks. Flow connections. Licensing and pricing conditions. Flow templates.

Building Flows
Building flows from templates. Building flows from scratch. Working with services, triggers, actions, conditions, parallelism and loops. Run a flow on a schedule. Calling custom business services. Using approval options. Observing flows. Limits and configuration. Team Flows. Creating expressions with the Workflow Definition Language.

Combining PowerApps and Flow
Extending PowerApps with Flow. Extending Flow with PowerApps.

Using PowerApps and Flow on On-premises data
What are gateways? Set up a gateway for on premises connections. Consuming On-premises connections in PowerApps and Flow.

PowerApps and Flow Admin Center
Managing environments and security. Data Loss Prevention policies. Migrating PowerApps apps and resources. Migrating flows.

Consuming your own services
What are web services? Introduction to Swagger. Creating a custom connection. Consuming custom connections from PowerApps or Flow.






Configuring and Administering Office 365

4 days **UO365A**

28 - 31 October 2019
16 - 19 December 2019
10 - 13 February 2020
06 - 09 April 2020
02 - 05 June 2020

Learning Goals
This training targets all the key components of Microsoft Office 365: Microsoft Exchange Online, SharePoint Online and Skype for Business Online. You will learn how to configure and manage an Office 365 environment and choose between the different deployment models. We will show you how to automate Office 365 management tasks using 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 Office 365. Key Office 365 Features. Office 365 Subscription plans. Office 365 Connectivity. Office 365 Security. Office 365 Service Continuity.

Managing Office 365
Managing Clients. Deploying Office 365 ProPlus. Office 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. Directory Synchronization with Azure AD Connect. Federation and Single Sign-On with AD FS. Pass-through Authentication. Seamless Single Sign-On. Azure AD Business to Business. Managing AzureAD objects with PowerShell.

Exchange Online
Exchange Online Feature Overview. Management Tools. Role-based Access Control. Creating and Managing Recipients. Exchange Online Protection. Exchange Online Archiving. Exchange Online Transport Rules. Advanced Exchange management with PowerShell.

Office 365 Groups
Office 365 Groups Overview. Creating Office 365 Groups. Office 365 Group Connectors. Office 365 Groups Administration.

Microsoft Teams and Skype for Business Online
Skype for Business Online Overview. Microsoft Teams Overview. Features: IM, Presence and Conferencing. Teams and Skype Admin Center. Federation with other organizations and Skype. Teams Chat-Based Hub: Channels, Tabs, Connectors.

SharePoint Online
SharePoint Online Overview. SharePoint Online Management. SharePoint Online Security. Classic versus Modern Sites. Hub Sites. External Sharing. Managed Metadata and the Term Store. SharePoint Online Search.

Security and Compliance
Assign Permissions to people in your organization. Manage Classifications: Labels, Policies and Sensitive Information Types. Data Loss Prevention. Data Governance: Archive, Retention, Disposition and Revision. Threat Management: Anti-malware, Quarantine, Safe Attachments. Search and Investigation: eDiscovery and Audit Logging. Reports. Office 365 Analytics. Office 365 Secure Score.

Hybrid Deployment
Exchange Hybrid. Skype for Business Hybrid. SharePoint Hybrid.

Office 365 Essentials

3 days **UO365P**

28 - 30 October 2019
16 - 18 December 2019
24 - 26 February 2020
27 - 29 April 2020

Learning Goals
This training targets all the key components of Microsoft Office 365: Microsoft Exchange Online, SharePoint Online, Microsoft Teams and Skype for Business Online. You will learn how to configure and manage an Office 365 environment, how to create a mailbox, setup a SharePoint site and configure conferencing with Skype for Business. As part of your Office 365 subscription you also get access to lots of new cloud services: Planner, PowerApps, Flow,...

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

Understanding Office 365
Introduction to Office 365. Key Office 365 Features. Office 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.

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

SharePoint Online
SharePoint Online Sites and Site Collections. Delegated Administration. Modern Team and Communication Sites. Hub Sites. Collaboration and Document Management.

Office 365 Groups
Office 365 Groups Overview. Collaboration in Mind. Creating Office 365 Groups. Office 365 Groups Limitations.

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

Delve
Delve Overview. Manage your Profile. Discover and Organize Content. Group and Share Documents.

Planner and Sway
Organize Your Teamwork with Office 365 Planner.Create and Share Amazing Stories with Sway.

Microsoft Teams
Chat-based Workspace. A Hub for Teamwork. Teams versus Office 365 Groups. Desktop, Mobile and Web Teams Client. Channels.

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 PowerApps
PowerApps Overview. PowerApps Studio. Use PowerApps to access data in SharePoint, Excel, Salesforce, ...

Microsoft Flow
Flow Overview. Creating Flows based on a template. Interaction with SharePoint, Twitter, Exchange Online, ... Scheduled Flows. Button Flows.

Analyzing your data with Power BI for Business Users

3 days **UBIPBE**

28 - 30 October 2019
16 - 18 December 2019
10 - 12 February 2020
23 - 25 March 2020
18 - 20 May 2020
29 June - 01 July 2020

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, Facebook.... 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.

Getting started with Power BI Desktop
The Power BI Desktop User Interface. Creating Queries to load data. Building a basic Data Model and Refreshing Data. Creating a basic Report. Publishing to the Power BI Service.

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 textboxes, 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 Drillthrough 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. Using Quick Insights. Creating Reports in the Power BI Service. Printing Reports. Export to PowerPoint. Embedding Reports in SharePoint Online. Analyze in Excel.

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.

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. Report usage metrics.

Using Power BI with Mobile Devices
Supported Platforms. Accessing Reports and Dashboards from mobile devices.

Analyzing your data with Power BI for BI Professionals

5 days **UBIPB**

21 - 25 October 2019
09 - 13 December 2019
25 - 29 January 2020
03 - 07 February 2020
06 - 10 April 2020
25 - 29 May 2020

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 the M query language. 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 basics. Overview of Power BI Desktop. Introducing the Power BI Service.

Creating Queries using Power BI Desktop
Overview of supported Data Sources. Importing data, Direct Query and Live Connections. Loading data from CSV and Excel files. Loading data from relational databases. Combining data from multiple files. Applying basic transformations. Query Folding.

Writing Advanced Queries in Power BI Desktop
Advanced Transformations. Appending and Merging Queries. Working with Query Parameters. M Language Syntax. M Query Basics. Defining and using Query Functions.

Building a Data Model
Why do we need a Data Model? Authoring data models in Power BI Desktop. Data model storage. Vertipaq Analyzer.

Relationships
1:n relationships. n:m relationships. Filter direction. Role-playing dimensions. One way versus both way filters.

Storage modes
Import data. DirectQuery. Live connection. Aggregation tables.

Data Analysis Expressions (DAX)
DAX introduction. Calculated columns. Measures. Tables. Calculate.

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. Printing a Power BI Report. Creating Power BI Templates.

Enhancing Reports in Power BI Desktop
Working with Slicers and Filters. Working with Drillthrough report pages. Creating custom Tooltips. Working with Bookmarks. Visual hierarchies and drill-down behavior. Grouping and Binning. What If Parameters. 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. Overview of the Power BI Service UI. Creating and using App Workspaces.

Creating Datasets and Reports in Power BI Service
Creating Datasets in the Power BI Service. Using Quick Insights. Creating Reports in Power BI Service. Printing Reports. Export to PowerPoint. Embedding Power BI 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.

Sharing Content in the Power BI Service
Sharing Reports and Dashboards with internal and external users. Sharing content using App Workspaces. Creating Power BI Apps. Consuming Power BI Apps. Using Publish to Web with Reports. Creating Report Subscriptions.

Working with Data Gateways
The need for a Data Gateway. Installing and configuring a Data Gateway. Creating Data Sources on a Data Gateway. Scheduling Dataset refreshes. Logging in the Data Gateway. Configuring incremental data refreshes in Power BI Premium. Working with Direct Query and Live Connections.

Working with Dataflows
Create Dataflows to extract and clean data in the cloud. Dataflows, Entities and the Common Data Model. Creating Dataflows. Scheduling 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.

Mastering DAX NEW

2 days **UDAX**

14 - 15 November 2019
27 - 28 January 2020
14 - 15 April 2020
22 - 23 June 2020

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
Overview of a Tabular Model. DAX use cases. Understanding calculated columns and measures. DAX data types. Introducing DAX variables. Handling errors in DAX. Basic Aggregation and Iteration functions. DAX as a query language.

Querying Tabular Models
Introducing DAX Studio. Using the EVALUATE function. Sorting and filtering results. Implementing paging. Grouping results using SUMMARIZE. Retrieving metadata. Performance monitoring.

Table functions in DAX
Introduction to table functions. The FILTER function. The ALL and ALLEXCEPT functions. The DISTINCT and VALUES functions. The RELATEDTABLE function. Using a table as a scalar value.

The CALCULATE function in DAX
Introduction to the CALCULATE function. The CALCULATE function and the row and filter context. Filtering with the CALCULATE function. The ISFILTERED and ISCROSSFILTERED function. The HASONEVALUE function. Calculating ratios and percentages.

Working with Iterators
Using Iterator functions. Computing averages moving averages. Using RANKX. RANKX and HASONEVALUE. Optional parameters of the RANKX function.

Time Intelligence with DAX
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. Overview of semi-additive measures. Working with Opening and Closing Balances. Advanced Time Intelligence functions.

Developing for the Power BI Platform

3 days **UBIPBD**

25 - 27 November 2019
17 - 19 February 2020
27 - 29 April 2020

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.



Querying SQL Server with Transact-SQL

3 days **UTSQL**

18 - 20 November 2019
13 - 15 January 2020
02 - 04 March 2020
14 - 16 April 2020
02 - 04 June 2020

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 2012 and higher versions as well 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. Configuratin manager. SQL Server Management Studio. Using the graphical query builder in Management Studio. Using the sqlcmd Utility. Using SSL Server Profiler. 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.

<wModifying 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.

Developing and optimizing SQL Server databases

5 days **USQLD**

14 - 18 October 2019
02 - 06 December 2019
10 -14 February 2020
30 March - 03 April 2020
08 - 12 June 2020

Learning Goals
This course describes logical table design, indexing and query plans in SQL Server. 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.

Target audience
IT Professionals who want to become skilled on SQL Server 2014 or higher product features and technologies for implementing a database.

Introduction to Database Development
Introduction to the SQL Server Platform. Working with SQL Server Tools. Configuring SQL Server Services.

Designing and Implementing Tables
Designing Tables. Working with Schemas. Creating and Altering Tables.

Ensuring Data Integrity through Constraints
Enforcing Data Integrity. Implementing Domain Integrity. Implementing Entity and Referential Integrity.

Introduction to Indexing
Core Indexing Concepts. Single Column and Composite Indexes. SQL Server Table Structures. Working with Clustered Indexes.

Advanced Indexing
Execution Plan Core Concepts. Common Execution Plan Elements. Working with Execution Plans. Designing Effective Nonclustered Indexes. Performance Monitoring.

Columnstore Indexes
Columnstore Indexes. Best Practices for 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. Implementation Considerations for 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. Native Stored Procedures.

Implementing Managed Code in SQL Server
Introduction to SQL CLR Integration. Importing and Configuring Assemblies. Implementing SQL CLR Integration.

Storing and Querying XML Data in SQL Server
Introduction to XML and XML Schemas. Storing XML Data and Schemas in SQL Server. Implementing the XML Data Type. Using the T-SQL FOR XML Statement. Getting Started with XQuery. Shredding XML.

Working with SQL Server Spatial Data
Introduction to Spatial Data. Working with SQL Server Spatial Data Types. Using Spatial Data in Applications.

Administering Microsoft SQL Server Databases

5 days **USQLA**

18 - 22 November 2019
27 - 31 January 2020
23 - 27 March 2020
15 - 19 June 2020

Learning Goals
This course provides students with the knowledge and skills to maintain a Microsoft SQL Server 2014 or more recent database.
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.

SQL Server Performance Tuning and Optimization

5 days **USQLOP**

07 - 11 October 2019
09 - 13 December 2019
10 - 14 February 2020
20 - 24 April 2020
22 - 26 June 2020

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

CPU and process scheduling
Threads and workers. Worker thread binding. Wait stats analysis.

IO and database structure
Databases. Data files. 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. Non-clustered and clustered columnstore indexes. Delayed durability. In-memory OLTP.

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.

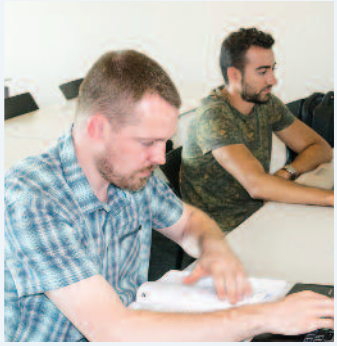
Index and query tuning
Understanding the query plan operators. How to measure query cost. Common query tuning techniques.

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.

Monitoring and baseline performance
Performance monitor. Profiler. Extended Events. Data collector.

Extended Events
Profiler versus Extended events. Defining sessions. Using extended events to detect common performance issues.


Microsoft Business Intelligence Technology Overview

2 days **UBIT**

Business Intelligence is a hot topic today: In an information driven society, analyzing and reporting upon the data that lives within an enterprise is crucial. Microsoft offers a lot of products that can help you setup your Business Intelligence infrastructure. In this course, we focus on both self-service BI with Power BI as well as enterprise BI with Microsoft SQL Server.

In this demo-rich course, we briefly demonstrate the capabilities of each of these tools and focus upon their advantages and disadvantages. Student will have a 360 degree view of the Microsoft Business Intelligence offering, which will help them decide which technologies are useful in their context. Details see www.u2u.be/cc/ubit.

Implementing Data Warehouses with Integration Services

5 days **USQLIS**

25 - 29 November 2019
17 - 21 February 2020
04 - 08 May 2020

Learning Goals
Students will learn how to create a data warehouse with Microsoft SQL Server 2014 or more recent, implement ETL with SQL Server Integration Services, and validate and cleanse data with SQL Server Data Quality Services and SQL Server Master Data Services.

Target Audience
Database professionals who need to create and support a data warehousing solution.

Introduction to Data Warehousing
Overview of Data Warehousing. Considerations for a Data Warehouse Solution.

Planning Data Warehouse Infrastructure
Considerations for Data Warehouse Infrastructure. Planning Data Warehouse Hardware.

Designing and Implementing a Data Warehouse
Data Warehouse Design Overview. Designing Dimension Tables. Designing Fact Tables. Physical Design for a Data Warehouse.

Creating an ETL Solution with SSIS
Introduction to ETL with SSIS. Exploring Data Sources. Implementing Data Flow.

Implementing Control Flow in an SSIS Package
Introduction to Control Flow. Creating Dynamic Packages. Using Containers. Managing Consistency.

Debugging and Troubleshooting SSIS Packages
Debugging an SSIS Package. Logging SSIS Package Events. Handling Errors in an SSIS Package.

Implementing a Data Extraction Solution
Planning Data Extraction. Extracting Modified Data.

Loading Data into a Data Warehouse
Planning Data Loads. Using SSIS for Incremental Loads. Using Transact-SQL Loading Techniques. Enforcing Data Quality. Introduction to Data Quality. Using Data Quality Services to Cleanse Data. Using Data Quality Services to Cleanse Data.

Master Data Services
Introduction to Master Data Services. Implementing a Master Data Services Model. Managing Master Data. Creating a Master Data Hub.

Extending SQL Server Integration Services
Using Scripts in SSIS. Using Custom Components in SSIS.

Deploying and Configuring SSIS Packages
Overview of SSIS Deployment. Deploying SSIS Projects. Planning SSIS Package Execution.

Consuming Data in a Data Warehouse
Introduction to Business Intelligence. Enterprise Business Intelligence. Self-Service BI and Big Data.

Microsoft SQL Server Reporting Services

5 days **USQLRS**

21 - 25 October 2019
09 - 13 December 2019
09 - 13 March 2020
08 - 12 June 2020

Learning Goals
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 2012, 2014, 2016 and 2017.

Target Audience
This course is intended for database administrators, database developers, IT professionals, and partners who have a basic SQL Server experience.

Introduction to Microsoft SQL Server Reporting Services
Overview of Microsoft SQL Server Reporting Services. Overview of Reporting Services architecture.

Authoring Basic Reports
Creating a basic table report. Formatting report pages. Calculating values.

Manipulating Data Sets
Defining report data. Using parameters and filters. Using parameter lists.

Report Enhancements
Interactive navigation. Displaying data. Multi-select parameters. Interactive column sorting. Floating headers.

Advanced Report Components
Advanced charting and sparklines. Plotting data on maps. Visualizing KPIs.

Report On OLAP Data
What is OLAP and MDX. Running Analysis Services based reports. Using the OLAP query builder.

Mobile And KPI Reports
Building reports for multiple devices. Building multi-device designs. Visualizing KPIs directly in the portal.

Managing Content
Publishing content. Executing reports. Creating cached instances. Creating snapshots and report history. Creating report subscriptions.

Administering Reporting Services
Server administration. Performance and reliability monitoring. Database administration. Security administration.

Programming Reporting Services
Querying server information. Automating report management. Rendering reports. Creating custom code.

Self-service Reporting
SQL Server Report Builder. Creating and configuring shared data sets. Developing shared report parts. Building reports with shared data sets and report parts.

Branding Reporting Services
The new branding functionality. A closer look at the default branding. Creating your own design. Uploading and activating your branding.

Microsoft SQL Server Analysis Services

5 days **USQLAS**

04 - 08 November 2019
20 - 24 January 2020
06 - 10 April 2020
29 June - 03 July 2020

Learning Goals
OLAP (OnLine Analytical Processing) cubes to 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. This course focusses on the multi-dimensional cubes and the MDX language.

Target audience
This course is intended for developers and administrators who want to learn the skills to develop Analysis Services cubes. It can also be attended by administrators who want to acquire a deeper knowledge of the server they are managing.

Introduction
The need for OLAP and Analysis Services. Business Intelligence in SQL Server. Using SQL Server Data Tools (SSDT).

Loading the relational data
Getting started with SQL Server Data Tools (SSDT). Data Sources and Impersonation. Data Source Views. Exploring the data.

Building and deploying dimensions
Dimension Services terminology. Building dimensions with the wizard. Fine-tuning dimensions in the editor. Handling attribute-relationships.

Building and deploying cubes
Cube terminology. Using the cube wizard. Additive, semi-additive and none-additive measures. Building and fine-tuning cubes in the cube editor. Deploying cubes and dimensions.

Browsing the data
Browsing from within SSDT and Management Studio. Browsing from Excel. Browsing with Reporting Services. Access cubes from a custom .Net application.

Processing Cubes and Dimensions
Different types of processing. Processing dimensions. Processing cubes.

Aggregation design
MOLAP, ROLAP and HOLAP storage modes. Partitioning the cube. Creating aggregations. Usage based aggregation design. Pro-active caching.

Multi-Dimensional Expressions (MDX)
MDX expressions and queries. Calculated members. CurrentMember and MDX navigtion functions. Working with tuples. Named sets. MDX scrips. Adding Business Intelligence.

Key Performance Indicators (KPI)
What are KPIs. Designing KPIs. Using the KPI browser.

Translations
Dimension translations. Cube translations. Testing translated cubes.

Actions
Types of actions. Creating Actions. Using Actions.

Perspectives
The need for perspectives. Creating perspectives. Browsing perspectives.

Dimension Usage
Degenerated dimensions. Referenced dimensions. Many-to-many dimensions. Other types of dimensions.

Administration
Installing Analysis Services. Backup and Restore. Securing Analysis Services. Monitoring.

Microsoft SQL Server Analysis Services Tabular

2 days **USQLAT**

This instructor-led course will provide you with the knowledge and skills to develop Tabular models in SQL Server Analysis Services: 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.

Business Intelligence with R

2 days **URBI**

The statistical language R has become very popular as a tool for the data scientist. Microsoft has made major steps in integrating R in its business intelligence stack. The learning goals of this course are twofold: Introduce students into the langauge R in general. Show students how they can use this R language in the most important Microsoft BI tools: SQL Server, Reporting Services, Power BI, Azure and Visual Studio.
Details see www.u2u.be/cc/urbi

Using Microsoft Dynamics 365

3 days **UCRM365E**

04 - 06 November 2019
24 - 26 February 2020
02 - 04 June 2020

Learning Goals
Dynamics 365 Customer Engagement refers to the applications that make up the CRM portion of Dynamics 365, which includes the Sales, Customer Service, Field Service, and Project Service Automation applications. You learn about the out-of-the-box application functionality in Dynamics 365 Customer Engagement.

Target audience
This course is intended for end users, business users and key users new to Dynamics 365 Customer Engagement.

Dynamics 365 Customer Engagement Overview
Microsoft Dynamics 365 concepts and terminology. Overview of the Microsoft Dynamics 365 User Interface. Navigating Microsoft Dynamics 365. Working with Dynamics 365 Applications. Using the Microsoft Dynamics 365 Command Bar. Record management in Microsoft Dynamics 365. Quick Find and Entity Filtering. Working with Advanced Find. Working with Relationship Hierarchies. Using Microsoft 365 for Outlook. Overview of Sales, Marketing and Service Management.

Working with Customers
Introduction to the Account and Contact Entity. Using the Account entity. Using the Contact entity. Account and Contact relationships. Working with Activities. Using Notes and Attachments. Hierarchy Visualization with Accounts and Contacts.

Sales Management in Dynamics 365 Customer Engagement
The Sales Management Life Cycle. Core record types used in Microsoft Dynamics 365 sales management. Working with the Competitor and Sales Literature entities. Using Leads in Microsoft Dynamics 365. Qualifying Leads into Opportunities. Managing the Product Catalog in Microsoft Dynamics 365. Maintaining Price and Discount lists. Working with Opportunity Products. Creating and maintaining Quotes for Opportunities. Creating and working with Orders and Invoices.

Marketing Automation in Dynamics 365 Customer Engagement
The concept of a Marketing List. Working with Static and Dynamic Marketing Lists. Working with Quick Campaigns. Planning and budgeting tasks related to marketing campaigns. Marketing Automation Life Cycle. Planning and Creating Marketing Campaigns. Campaign Execution and Response Management.

Service Management in Dynamics 365 Customer Engagement
The Service Management Life Cycle. Core entities used in Microsoft Dynamics 365 Service Management. The lifecycle of a Case in Microsoft Dynamics 365. Writing and maintaining Knowledge Base Articles. Defining Entitlement Templates. Creating and using Entitlements. The Support Contract lifecycle. Working with Queues in Microsoft Dynamics 365. Defining and maintaining the Microsoft Dynamics 365 Subject Tree. Creating and using SLA's in Dynamics 365.

Service Scheduling in Dynamics 365 Customer Engagement
Service Scheduling Life Cycle. Service Scheduling functionality. This includes Scheduling Services, Scheduling Administration, and Defining Services. Defining Sites in Microsoft Dynamics 365. Facility and Equipment management. The concepts of Resources and Resource Groups. Defining Services. Defining Selection Rules for Services. Overview of the Service Calendar. Scheduling Service Activities.

Developing Microsoft Dynamics 365 Solutions

5 days **UCRM365D**

30 September - 04 October 2019
18 - 22 November 2019
03 - 07 February 2020
06 - 10 April 2020
15 - 19 June 2020

Learning Goals
This course will teach developers how they can extend Dynamics 365 for Customer Engagement. Dynamics 365 for Customer Engagement refers to the applications that make up the CRM portion of Dynamics 365, which includes the Sales, Customer Service, Field Service, and Project Service Automation applications. This training course is designed to help .NET and JavaScript developers learn the various development features of both Microsoft Dynamics 365 for Customer Engagement Online and On-Premise.

Target audience
This course is targeting developers who have none or very limited Dynamics for Customer Engagement development skills.

Extensibility Overview
Overview of the Microsoft Dynamics 365 for Customer Engagement Application Framework. Extending the Dynamics 365 for Customer Engagement platform. Accessing data from Microsoft Dynamics 365 for Customer Engagement. Helpful skills in developing Microsoft Dynamics 365 for Customer Engagement solutions.

Working with the Dynamics 365 for Customer Engagement Web API
Introduction to the Dynamics 365 for Customer Engagement Web API Registering applications with Azure Active Directory. Authenticate with the Dynamics 365 REST API using OAuth 2.0 and ADAL/MSAL. Performing CRUD operations using the Dynamics 365 Web API. Executing Actions and Functions.

Working with the Dynamics 365 for Customer Engagement SOAP Web Service
SOAP Endpoints in Microsoft Dynamics 365 for Customer Engagement. Early versus late-binding when accessing entity records. The Organization Service. Create, update, delete and retrieve entity records. Retrieving data using the QueryExpression and QueryByAttribute classes. Fault handling.

Querying Dynamics 365 Customer Engagement with FetchXML
Introduction to FetchXML. Writing FetchXML queries. Using FetchXML Builder to create FetchXML queries. Executing FetchXML queries using the Web API. Executing FetchXML queries using the SOAP API.

Implementing Business Processes
Creating processes. Writing custom Workflow activities. Deploying and debugging custom workflow activities. Real-time workflows.

Plug-ins
Plug-in overview. Writing custom plug-ins. Register and deploy plug-ins using the Plug-In Registration Tool. Debugging plug-ins in Dynamics 365 for Customer Engagement On-Premise. Debugging plug-ins in Dynamics 365 for Customer Engagement Online usng the Plug-In Profiler. Deploying Plug-Ins with Solutions.

The Dynamics 365 client-side JavaScript programming
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 object. Best practices in writing client-side Code.

Client Extensions
Customizing the Site Map. Customizing the Command Bar. URL addressable forms and views.

Building Web Resources
Web resources overview. Building custom HTML Web Resources. JavaScript programming with the Dynamics 365 Customer Engagement Web API. jQuery in Dynamics 365 Customer Engagement. Using the Xrm.WebApi JavaScript object model to access create and manage records.

Microsoft Dynamics 365 for Power Users

5 days **UCRM365P**

18 - 22 November 2019
27 - 31 January 2020
30 March - 03 April 2020
25 - 29 May 2020

Learning Goals
Dynamics 365 applications like Sales, Customer Service, Marketing… are built on a powerful platform allowing you to further customize the existing applications or build you own application from scratch. In this course, you'll learn how to customize Dynamics 365 for Customer Engagement or build Model-Driven Apps from scratch using the Microsoft Power Platform.

Target audience
This 5-day course is intended for power users, consultants and key users new to Dynamics 365 for Customer Engagement or Model-Driven Apps.

Introduction to Microsoft Dynamics 365 for Customer Engagement and the Microsoft Power Platform
The past: Dynamics CRM. From Dynamics CRM to Dynamics 365 for Customer Engagement, The Common Data Model and Model-Driven Apps. Overview of the Microsoft Power Platform. Navigating Microsoft Dynamics 365 for Customer Engagement/Model-Driven Apps. The classic UI vs the Unified Interface. Working with Environments. Record management. Searching for records.

Introduction to Customization and Solutions
Introduction to customizing Model-Driven Apps. Recognize opportunities to extend Microsoft 365 for Customer Engagement. Working with Publishers and Solutions. Difference between Managed and Unmanaged Solutions. Importing and Exporting Solutions. Versioning solutions.

Implementing Security
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. Defining Hierarchy Security. The difference between Manager vs. Position hierarchy. Configuring Hierarchy Security. Assign security roles to an App.

Customizing Entities
Create custom Entities. defining Entity Ownership. Defining custom Activity Entities. The configurable properties of an Entity. Deleting Entities and its implications. Assigning Entity icons. Translating entities. Custom Entity Security.

Customizing Fields
Adding custom fields to Entities. Supported field data types. Working with Option Sets. Using the Image data type. Using the Status and Status Reason field. Working with Calculated and Rollup Fields.

Managing Relationships
Plan, create, and configure Entity Relationships. Define possible relationship types - 1:N, N:N. Using 1:N relationships. Working with automatic with N:N relationships. Working with manual with N:N relationships. Connections and Connection Roles. Defining self-referential relationships. Defining hierarchy visualizations.

Customizing Forms
Define the structure of Forms. How to add, remove or modify the components of a Form using the Form Designer. Placing image fields on Forms. Configure and use Quick Create, Quick View and Card Forms. Securing Forms.

Business Rules
Describe the uses of Business Rules. How to create and apply Business Rules. Defining the scope of Business Rules. Business Rules limitations.

Customizing Views
Examine the different types of system, public and personal Views. Create new public views and modify existing Views. Detail the usage of the different system Views. Configure Editable Grid Views.

Charts and Dashboards
Create and modify System Charts. Create and modify System Dashboards.

Additional Security Options
Working with Field Level Security. Configuring and working with Access Teams. Enabling Auditing in Dynamics 365 for Customer Engagement.

Theming
What is a Theme? Creating a custom Theme. Setting a default Theme.

Creating and working with Apps
Concepts of an 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.

Integrating Model-Driven Apps/Dynamics 365 for Customer Engagement with the Microsoft Power Platform
Integrating Microsoft Power BI. Automation with Microsoft Flow and native Workflows. Embbing Canvas Apps in Model-Driven Apps.

Fundamentals of a Windows Server Infrastructure

5 days **MS10967**

This five day course provides the networking, security, and system administration information that you need to implement a Windows Server infrastructure. It covers the basics of installation and configuration, storage, network infrastructure, network components, network protocols, server roles, Active Directory Domain Services (AD DS), Group Policy, IT security, server security, network security, security software, monitoring server performance, and maintaining a Windows Server. Details see www.u2u.be/cc/ms10967.

Public Key Infrastructure

2 days **UPKI**

This course provides students with the knowledge and skills to design, deploy, and manage a public key infrastructure (PKI) to support applications that require distributed security. Students get hands-on experience implementing solutions to secure PKI-enabled applications and services, such as Exchange Server, IIS, Outlook, and remote access services. Individuals should have knowledge and experience to install and configure Active Directory and security mechanisms for computers running Windows Server. Details see www.u2u.be/cc/upki.

Identity with Windows Server 2016 AD Services

5 days **MS20742**

09 - 13 December 2019
02 - 06 March 2020
11 - 15 May 2020

Learning Goals
This five-day instructor-led course teaches IT Pros how to deploy and configure Active Directory Domain Services (AD DS) in a distributed environment, how to implement Group Policy, how to perform backup and restore, and how to monitor and troubleshoot Active Directory–related issues with Windows Server 2016.

Target Audience
IT professionals who have some AD DS knowledge and experience and who aim to develop knowledge about identity and access technologies in Windows Server 2016.

Installing and configuring DCs
Overview of AD DS. Overview of AD DS DCs. Deploying DCs.

Managing objects in AD DS
Managing user accounts. Managing groups in AD DS. Managing computer accounts. Using Windows PowerShell for AD DS administration. Implementing and managing organizational units.

Advanced AD DS infrastructure management
Overview of advanced AD DS deployments. Deploying a distributed AD DS environment. Configuring AD DS trusts.

Implementing and administering AD DS sites and replication
Overview of AD DS replication. Configuring AD DS sites. Configuring and monitoring AD DS replication.

Implementing Group Policy
Introducing Group Policy. Implementing and administering GPOs. Group Policy scope and Group Policy processing. Troubleshooting the application of GPOs.

Managing user settings with GPOs
Implementing administrative templates. Configuring Folder Redirection and scripts. Configuring Group Policy preferences.

Securing AD DS
Securing domain controllers. Implementing account security. Audit authentication. Configuring managed service accounts (MSAs).

Deploying and managing AD CS
Deploying CAs. Administering CAs. Troubleshooting and maintaining CAs.

Deploying and managing certificates
Deploying and managing certificate templates. Managing certificate deployment, revocation, and recovery. Using certificates in a business environment. Implementing and managing smart cards.

Implementing and administering AD FS
Overview of AD FS. AD FS requirements and planning. Deploying and configuring AD FS. Overview of Web Application Proxy.

Implementing and administering AD RMS
Overview of AD RMS. Deploying and managing an AD RMS infrastructure. Configuring AD RMS content protection.

Implementing AD DS synchronization with Azure AD
Planning and preparing for directory synchronization. Implementing directory synchronization by using Azure AD Connect. Managing identities with directory synchronization.

Monitoring, managing, and recovering AD DS
Monitoring AD DS. Managing the AD DS database. Recovering AD DS objects.

Scripting with PowerShell

3 days **UPSHELL**

PowerShell is a task automation and configuration management framework from Microsoft, consisting of a command-line shell and associated scripting language. Initially a Windows component only, known as Windows PowerShell, it was made open-source and cross-platform in 2016 with the introduction of PowerShell Core. The former is built on .NET Framework while the latter on .NET Core. Today, PowerShell can be used to manage and deploy all your server workloads, Windows or Linux, on-prem or cloud. This course is based on Windows PowerShell 5.1 and PowerShell Core 6.0. Details see www.u2u.be/cc/upshell.

Mastering PowerShell

5 days **UPSHELLA**

14 - 18 October 2019
09 - 13 December 2019
17 - 21 February 2020
20 - 24 April 2020
15 - 19 June 2020

Learning Goals
This course will get you acquainted with all the different features of Windows PowerShell 5.1 and PowerShell Core 6.0. 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 Windows Server and Microsoft applications. Developers interested in automation, interfacing with C#, 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, ...

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. 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.

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.

Implementing Active Directory Federation Services

4 days **UADFS**

12 - 15 November 2019
13 - 16 January 2020
16 - 19 March 2020
25 - 28 May 2020

Learning Goals
This course provides students with the knowledge and skills to install and configure Active Directory Federation Services. They will also learn how to design AD FS for security and high availability. This training focuses on AD FS 3.0 and AD FS 2016.

Target Audience
IT administrators who are responsible for the setup and configuration of claims-based authentication, whether on premises or to connect to services in the cloud.

Claims-based Authentication
Claims-based Authentication Overview. Identity Management Solutions. The evolution of AD FS. AD FS Scenarios. AD FS Terminology.

AD FS Prerequisites
Windows prerequisites. Attribute Stores. Web Applications. Web Services.

Public Key Infrastructure
AD FS Certificate Requirements. Cryptography Overview. Certification Authorities. PKI Design.

Installing AD FS
Federation Server Roles. Installing the AD FS Role. Federation Server Configuration. Administering AD FS.

AD FS in a Single Organization
AD FS in a Single Organization. Configure AD FS for a Single Organization. Claim Rules. Access Control Policies.

AD FS in a Business-to-Business Federation
AD FS in a Federated Environment. Configure AD FS in a B2B Scenario. Managing Claims Across Organizations.

Federation with the Cloud
Azure AD and Office 365. Synchronize Users to the Cloud with Azure AD Connect. Configure Federation to the Cloud with AD FS. Azure Multi-Factor Authentication.

Dynamic Access Control
Dynamic Access Control Overview. Claims and Claim Types. Central Access Rules and Policies. File Server Resource Manager. Resource Properties and Classification.

Workplace Join
Workplace Join Overview. Device Registration Service. Automatic and Silent Workplace Join. Workplace Join with a Windows Device. Workplace Join with an iOS Device.

Advanced AD FS Scenarios
High Availability. Advanced Configuration Options.

Claim Rule Language
Claim Sets Review. Claim Rule Language Syntax. Condition Statements. Issuance Statements. Advanced Options.

Web Application Proxy
Web Application Proxy Overview. Web Application Proxy Requirements. WAP Authentication.

The U2U Training Center

OUR LOCATION

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HOW TO GET HERE?

By car
U2U is located about 500m from the Highway R0 (Brussels Ring) Exit 10. Sufficient free parking space is available on the Researchpark avenue immediately in front or at the back of the U2U training center.

By bus
U2U is located within 5 minutes walking distance of the bus stop “Ganshoren Sport” of line 84 & 87.

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 the Brussels International Airport, it takes 15 minutes by taxi, or 35 minutes by train to arrive at the U2U training center. From the airport Brussels South (Charleroi), it takes you about 30 minutes by taxi or 1 hour by shuttle bus or train.