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# Course Catalog

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## a. Locations



Our trainings take place at various locations in the German-speaking countries.

### Public trainings:

You can enroll for public trainings at our training centers across Germany like in Berlin, Dresden, Hamburg, München / Munich, Düsseldorf, Frankfurt, and Stuttgart. Not all public trainings will be organized in all cities but you can still book a particular training for your team in one of our training and conference centers.

In Austria you can attend seminars and trainings in Wien / Vienna while we offer training dates in Switzerland in Zürich / Zurich.

### On-site trainings:

We have mobile and flexible trainers / lecturers who like to visit you and your team for an on-site training or a training in a conference center or hotel near you.

## USA

|          |  |
|----------|--|
| Chicago  | Tel:<br>Fax:                                 |
| Miami    | Tel: +1.305.395.7962<br>Fax: +1.305.395.7964 |
| New York | Tel: +1.212.380.1181<br>Fax: +1.305.395.7964 |



# 1. IT

## A. Altova MissionKit



### (i) BPMN using UModel



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2024709  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers, systems analysts, programmers, developers, consultants |
| <b>Prerequisites</b> | Knowledge in software development, project experience                    |
| <b>Method</b>        | Lecture with examples and exercises.                                     |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,850.00 USD                        | 1,800.00 USD                        | 1,850.00 USD                        |
| 27-28 Aug<br>22-23 Oct<br>24-25 Dec | 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 13-14 Aug<br>08-09 Oct<br>03-04 Dec |

Prices plus local taxes.



#### Course Description

Business Process Management and Notation (BPMN) is a graphical representation for specifying business processes in a business process model. The primary goal of BPMN is to provide a standard notation readily understandable by all business stakeholders. These include the business analysts who create and refine the processes, the technical developers responsible for implementing them, and the business managers who monitor and manage them. Consequently, BPMN serves as a common language, bridging the communication gap that frequently occurs between business process design and implementation. This training explains the three diagram types of BPMN, their elements and functions, and their correct usage for modeling activities and processes.



#### Course Outline

##### A. Overview

BPMN Scope - BPMN Elements - BPMN Diagram Types - Use of Text, Color, Size, and Lines in a Diagram - Flow Object Connection Rules - BPMN Extensibility

## **B. Collaboration**

Basic Collaboration Concepts - Pool and Participant - Message Flow - Conversations - Process within Collaboration  
- Choreography within Collaboration

## **C. Process**

Basic Process Concepts - Activities - Items and Data - Events - Gateways - Compensation - Lanes - Process Instances,  
Unmodeled Activities, and Public Processes - Auditing - Monitoring

## **D. Choreography**

Basic Choreography Concepts - Data - Use of BPMN Common Elements - Choreography Activities - Events - Gateways  
- Choreography within Collaboration



## (ii) Mapforce



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020988                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 03-04 Sep<br>29-30 Oct<br>24-25 Dec |

Prices plus local taxes.



### Course Description

Altova MapForce is an any-to-any graphical data mapping, conversion, and integration tool that maps data between any combination of XML, database, flat file, EDI, Excel, XBRL, and/or Web service, then transforms data instantly or autogenerates royalty-free data integration code for the execution of recurrent conversions. It provides powerful, visual XML mapping functionality for instantly transforming XML data from one XML format to any another XML format based on XML Schema or namespace aware DTDs, and can even generate an XML mapping component from an XML instance file. It includes the FlexText utility for parsing and converting text files such as mainframe text reports, text-based log files, and other legacy text file types in mapping designs. With its visual interface, FlexText lets you insert an existing text file and extract the portions you want to convert in the MapForce mapping interface. This training shows you in many hands-on labs how to develop mapping solutions for the above-mentioned combinations and to make the most of MapForce.



### Course Outline

#### A. XML Mapping

(0.25 Days) MapForce User Interface - Mapping between Components - Multiple XML Files from Single XML Source File, Excel Rows or per Table - Filtering - Sorting - Loops, Groups and Hierarchies - Code Generator

## **B. Database Mapping**

(0.125 Days) Setting up the XML-To-Database Mapping - Table Preview Customization - Components and Table Relationships - Database Actions: Insert, Update, Delete, Ignore - Generating Database Output Values - Table Actions - SQL WHERE / ORDER Component - SQL SELECT Statements as Virtual Tables - Stored Procedures - Querying Databases Directly - Database Query Tab

## **C. Text Mapping**

(0.25 Days) Mapping CSV and Text Files: Mapping CSV Files to XML / XML to CSV, Creating Hierarchies From CSV and Fixed Length Text Files, CSV File Options, Mapping Fixed Length Text Files (to a Database) - MapForce FlexText: Creating Split Conditions, Defining Multiple Conditions per Container/Fragment, Using FlexText Templates in MapForce, Using FlexText as a Target Component

## **D. Web Services Mapping**

(0.125 Days) Creating Web Service Projects from WSDL Files - Calling Web Services

## **E. General Functions**

(0.25 Days) Global Resources - Dynamic Input/Output Files per Component - Intermediate Variables - User-Defined Functions - Built-In Functions - Using the Command Line - Project Management - Chained Mappings / Pass-Through Components - Sequence of Processing Mapping Components - Merging Multiple Files into One Target - Documenting Mapping Projects



### (iii) Stylevision



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020985                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                              |
| 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 20-21 Aug<br>29-30 Oct<br>24-25 Dec | 03-04 Sep<br>05-06 Nov<br>31 Dec - 01 Jan |

Prices plus local taxes.



#### Course Description

Altova StyleVision is a WYSIWIG tool for designing documents, reports, and forms based on XML, SQL database, and XBRL inputs. It makes the power of XSLT available in an intuitive and visual design tool, and adds rich content such as charts, making it possible for designers and developers to focus on their target designs (in HTML, PDF, Word/Open XML, and other formats) rather than XSLT details. With StyleVision, a single design can be used to automatically publish in the above-mentioned formats. The same visual design tool also produces Authentic enterprise forms, which empower business users to analyze and update information stored in XML and SQL systems. This training helps you to understand the principles of Stylevision and to design your own documents, forms and reports based on XML and database input.



#### Course Outline

##### A. Presentation of XML Data

Creating a New SPS - Dynamic and Static Content - Simple Formatting and Transformations - Creating and Applying Global Templates - Modular stylesheets: Available Module Objects, Creating a Modular Stylesheet

##### B. Advanced Techniques

XPath Overview - Automatic Calculations and Conditions using XPath - Grouping and Sorting - Parameters and variables - Table of Contents - Links and References, Bookmarks - Design Fragments - Multiple Schema Sources

## **C. Font and Paragraph Formatting**

Working with CSS Styles - External Stylesheets - External and Internal CSS styles - Font Styles - Page Layout Properties, Containers, Background - Keeps and Breaks - Paragraph Formatting and Alignment - PDF Bookmarks - Document Sections

## **D. Altova Authentic forms**

Stylesheets for the Authentic View: Overview - Creating Forms Based on XML Schema - Form Objects: Fields, Tables, Lists, and Calendars - Working with Databases: Connecting to a Database, Select the Database Data, XML Databases, DB Filters

## **E. Design Objects**

Inserting XML Content as Text - Sorting and grouping - Using Data Input Elements - Lists and Tables - Graphics - Bookmarks and Hyperlinks - Automatic Calculations - XPath-Conditions

## **F. Charts and Reports**

Chart Basics - Typology of Charts: Pie Charts, Bar Charts, Line Charts, Value Line Charts, Area Charts, Candlestick Charts, Gauge Charts, Overlay Charts - Changing the Appearance of a Chart - Graphics - Tables



## (iv) UML using UModel



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2024708  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 3 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 1,800.00 USD                        | 1,700.00 USD                        | 1,800.00 USD                              |
| 17-19 Aug<br>12-14 Oct<br>14-16 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec |

Prices plus local taxes.



### Course Description

Unified Modeling Language (UML) is a standardized, general-purpose modeling language for software engineering and modeling. The Unified Modeling Language includes a set of graphic notation techniques to create visual models of object-oriented software-intensive systems. The Unified Modeling Language (UML) offers a standard way to visualize a system's architectural blueprints, including elements such as: activities actors, business processes, database schemas, (logical) components, programming language statements, and reusable software components. UML has 14 types of diagrams divided into two categories. Seven diagram types represent structural information, and the other seven represent general types of behavior, including four that represent different aspects of interactions. This training covers these diagrams and their elements, as well as their relationships and their usage scenarios in the software design life cycle.



### Course Outline

#### A. UML Structure Diagrams: Class / Object Diagram and Package Diagram

(0.75 Days) Diagrams: Class Diagram, Package Diagram, Object Diagram - Node Types: Class, Interface, InstanceSpecification, Package - Path Types: Aggregation, Association, Composition, Dependency, Generalization, InterfaceRealization, Realization, Usage, Package Merge, PackageImport

## **B. UML Structure Diagrams: Composite Structure Diagram, Component Diagram, Deployment Diagram**

(0.5 Days) Component Diagram: Component, Interface, ComponentRealization, Interface Realization, Usage Dependencies, Class, Artifact, Port - Composite Structure Diagram: Part, Port, Collaboration, CollaborationUse, Connector, Role Binding - Deployment Diagram: Artifact, Node, Deployment Specification, Association, Dependency, Generalization, Deployment, Manifestation

## **C. UML Behavior Diagrams: Use Case Diagram and Activity Diagram**

(0.5 Days) Activity Diagram: Action, Activity and ActivityPartition, Modeling the Logical Flow (ControlFlow and ObjectFlow, Nodes: ActivityFinal, ActivityNode, ControlNode, DecisionNode, FinalNode, FlowFinal, ForkNode, InitialNode, JoinNode, MergeNode), Modeling Data (DataStore, ObjectNode), Modeling Containment (InterruptibleActivityRegion, ExceptionHandler, ExpansionRegion) - Use Case Diagram: Actor, Extend/Include Relationship, UseCase

## **D. UML Behavior Diagrams: State Machine Diagram**

(0.25 Days) State Machine, Typology of States (Choice / History / Initial/ Junction Pseudostate, Composite State, Final State), Transition between States, Actions (Receive / Send Signal Action)

## **E. UML Behavior Diagrams: Sequence Diagram and Communication Diagram**

(0.5 Days) Sequence Diagram: Frame, Lifeline, Execution Specification, InteractionUse, CombinedFragment, Continuations, Coregion, Modeling Constraints (TimeConstraint, DurationConstraint, StateInvariant), Modelling Messages (Message, Found / Lost Message) - Communication Diagram: Frame, Lifeline, Message Interchange

## **F. UML Behavior Diagrams: Timing Diagram and Interaction Overview Diagram**

(0.5 Days) Interaction Overview Diagram: Frame, Interaction and InteractionUse - Timing Diagram: Frame, Message, Lifeline, Modeling Time





## (v) XMLSpy



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020300                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML Fundamentals                     |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 1,800.00 USD                        | 1,700.00 USD                        | 1,800.00 USD                              |
| 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec |

Prices plus local taxes.



### Course Description

Altova XMLSpy is a very advanced XML editor for modeling, editing, transforming, and debugging XML-related technologies. It offers a very complex XML interface, a graphical XML Schema designer, a code generator, file converters, debuggers, full database integration, support for XSLT, XPath, XQuery, WSDL and SOAP. This training walks you through the application while providing you with a fundamental knowledge of various XML technologies.



### Course Outline

#### A. General features of XMLSpy

(0.5 Days) XML Documents - Editing Views - DTDs and XML Schemas - Project Management and Altova Global Resources - Databases and Data Integration - Text Files - File/Directory Comparisons - Templates

#### B. XML Schema-Editor

(0.75 Days) Element Declarations - Attribute Declarations - Complex Type Definitions - Attribute Group Definitions - Model Group Definitions - Simple Type Definitions - Schemas and Namespaces: Access and Composition - Editor: Editing in Text View, Grid View, and Schema View - XML Schema features in XMLSpy

#### C. XPath Editor

(0.25 Days) Path Expressions: Axes, Steps, Node Tests - Predicates and Filters - Function Calls

## **D. Queries using XQuery**

(0.25 Days) FLWOR Expressions: For and Let Clauses, Where Clause, Order By and Return Clauses - Direct Element Constructors - Computed Constructors - Ordered and Unordered Expressions - Comparison Expressions - Conditional Expressions

## **E. Transformations using XSLT**

(0.75 Days) Stylesheet Structure - Template Rules and XPath-Patterns - Named Templates - Repetition - Conditional Processing - Variables and Parameters - Creating Nodes and Sequences - Sorting and Grouping

## **F. Web Services**

(0.25 Days) WSDL documents - PortType - Binding - Service and Ports - Validating the WSDL Document - Connecting to a Web Service and Opening Files - Sending a SOAP Request from the WSDL File - Creating WSDL Documentation - SOAP document structure - SOAP Debugger - SOAP Validation

## **G. Altova Authentic and Altova Stylevision**

(0.25 Days) Opening an XML Document in Authentic View - Authentic View Interface - Entering Data in Authentic View - Tables in Authentic View - Altova Stylevision

## A. BPMN



### (i) Business Process Model and Notation using Altova UModel



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2024715  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   | Intensive  |
| <b>Target Group</b>  | Project managers, systems analysts, programmers, developers, consultants |
| <b>Prerequisites</b> | Knowledge in software development, project experience                    |
| <b>Method</b>        | Lecture with examples and exercises.                                     |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                                   | Miami                  | New York               |
|---|------------------------|------------------------|
| 1,850.00 USD                              | 1,800.00 USD           | 1,850.00 USD           |
| 30-31 Jul<br>29-30 Oct<br>31 Dec - 01 Jan | 17-18 Sep<br>03-04 Dec | 15-16 Oct<br>10-11 Dec |

Prices plus local taxes.



#### Course Description

Business Process Management and Notation (BPMN) is a graphical representation for specifying business processes in a business process model. The primary goal of BPMN is to provide a standard notation readily understandable by all business stakeholders. These include the business analysts who create and refine the processes, the technical developers responsible for implementing them, and the business managers who monitor and manage them. Consequently, BPMN serves as a common language, bridging the communication gap that frequently occurs between business process design and implementation. This training explains the three diagram types of BPMN, their elements and functions, and their correct usage for modeling activities and processes.



#### Course Outline

##### A. Overview

BPMN Scope - BPMN Elements - BPMN Diagram Types - Use of Text, Color, Size, and Lines in a Diagram - Flow Object Connection Rules - BPMN Extensibility

## **B. Collaboration**

Basic Collaboration Concepts - Pool and Participant - Message Flow - Conversations - Process within Collaboration  
- Choreography within Collaboration

## **C. Process**

Basic Process Concepts - Activities - Items and Data - Events - Gateways - Compensation - Lanes - Process Instances,  
Unmodeled Activities, and Public Processes - Auditing - Monitoring

## **D. Choreography**

Basic Choreography Concepts - Data - Use of BPMN Common Elements - Choreography Activities - Events - Gateways  
- Choreography within Collaboration



## (ii) Business Process Model and Notation using Enterprise Architect



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2024718  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers, systems analysts, programmers, developers, consultants |
| <b>Prerequisites</b> | Knowledge in software development, project experience                    |
| <b>Method</b>        | Lecture with examples and exercises.                                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                | Miami                  | New York                            |
|------------------------|------------------------|-------------------------------------|
| 1,850.00 USD           | 1,800.00 USD           | 1,850.00 USD                        |
| 03-04 Sep<br>05-06 Nov | 08-09 Oct<br>10-11 Dec | 20-21 Aug<br>22-23 Oct<br>17-18 Dec |

Prices plus local taxes.



### Course Description

Business Process Management and Notation (BPMN) is a graphical representation for specifying business processes in a business process model. The primary goal of BPMN is to provide a standard notation readily understandable by all business stakeholders. These include the business analysts who create and refine the processes, the technical developers responsible for implementing them, and the business managers who monitor and manage them. Consequently, BPMN serves as a common language, bridging the communication gap that frequently occurs between business process design and implementation. This training explains the three diagram types of BPMN, their elements and functions, and their correct usage for modeling activities and processes.



### Course Outline

#### A. Overview

BPMN Scope - BPMN Elements - BPMN Diagram Types - Use of Text, Color, Size, and Lines in a Diagram - Flow Object Connection Rules - BPMN Extensibility

## **B. Collaboration**

Basic Collaboration Concepts - Pool and Participant - Message Flow - Conversations - Process within Collaboration  
- Choreography within Collaboration

## **C. Process**

Basic Process Concepts - Activities - Items and Data - Events - Gateways - Compensation - Lanes - Process Instances,  
Unmodeled Activities, and Public Processes - Auditing - Monitoring

## **D. Choreography**

Basic Choreography Concepts - Data - Use of BPMN Common Elements - Choreography Activities - Events - Gateways  
- Choreography within Collaboration



### (iii) Notation and Concepts



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2024716  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers,<br>systems analysts,<br>programmers,<br>developers,<br>consultants |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience                       |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.   |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                                   | Miami                  | New York               |
|---|------------------------|------------------------|
| 1,850.00 USD                              | 1,800.00 USD           | 1,850.00 USD           |
| 30-31 Jul<br>29-30 Oct<br>31 Dec - 01 Jan | 17-18 Sep<br>03-04 Dec | 15-16 Oct<br>10-11 Dec |

Prices plus local taxes.



#### Course Description

Business Process Management and Notation (BPMN) is a graphical representation for specifying business processes in a business process model. The primary goal of BPMN is to provide a standard notation readily understandable by all business stakeholders. These include the business analysts who create and refine the processes, the technical developers responsible for implementing them, and the business managers who monitor and manage them. Consequently, BPMN serves as a common language, bridging the communication gap that frequently occurs between business process design and implementation. This training explains the three diagram types of BPMN, their elements and functions, and their correct usage for modeling activities and processes.



#### Course Outline

##### A. Overview

BPMN Scope - BPMN Elements - BPMN Diagram Types - Use of Text, Color, Size, and Lines in a Diagram - Flow Object Connection Rules - BPMN Extensibility

## **B. Collaboration**

Basic Collaboration Concepts - Pool and Participant - Message Flow - Conversations - Process within Collaboration  
- Choreography within Collaboration

## **C. Process**

Basic Process Concepts - Activities - Items and Data - Events - Gateways - Compensation - Lanes - Process Instances,  
Unmodeled Activities, and Public Processes - Auditing - Monitoring

## **D. Choreography**

Basic Choreography Concepts - Data - Use of BPMN Common Elements - Choreography Activities - Events - Gateways  
- Choreography within Collaboration



## A. Business Intelligence



### (i) OLAP and Data Warehousing



#### Overview

|                      |                                 |
|----------------------|---------------------------------|
| <b>Course ID</b>     | 2020335                         |
| <b>Language</b>      | en                              |
| <b>Duration</b>      | 2 Days                          |
| <b>Delivery mode</b> | Classroom                       |
| <b>Course Type</b>   |                                 |
| <b>Target Group</b>  | Business Intelligence Developer |
| <b>Prerequisites</b> | General database knowledge      |
| <b>Method</b>        | Lecture and discussion          |
| <b>Course level</b>  | Beginning                       |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 13-14 Aug<br>08-09 Oct<br>03-04 Dec |

Prices plus local taxes.



#### Course Description

A data warehouse (DWH) is a database used for reporting and data analysis. It is a central repository of data which is created by integrating data from one or more disparate sources. Data warehouses store current as well as historical data and are used for creating trending reports for senior management reporting such as annual and quarterly comparisons. Online Analytical Processing (OLAP) is an approach to answering multi-dimensional analytical queries swiftly. OLAP is part of the broader category of business intelligence, which also encompasses relational database, report writing and data mining. This training walks you through the typical Business Intelligence project and helps you to understand the elements and architecture of a DWH and the usage scenarios for OLAP.



#### Course Outline

### A. Business Intelligence, OLAP, and Data Warehousing

(0.25 Days) Goals of a Data Warehouse - Components of a Data Warehouse: Operational Source Systems, Data Staging Area, Data Presentation, Data Access Tools - Dimensional Modeling: Fact Tables, Dimension Tables

### B. The Data Warehouse and Design

(0.5 Days) Operational Data - The Data Warehouse and Data Models: The Data Warehouse Data Model, The Midlevel Data Model, The Physical Data Model - Normalization and Denormalization - Metadata - Technical and Physical Architecture - Deploying and Supporting the DW/BI System

## **C. The Relational and the Multidimensional Models**

(0.25 Days) The Relational Model - The Multidimensional Model - Snowflake Structures - Differences between the Models - Independent Data Marts - OLAP and Aggregations - OLAP Operations

## **D. ETL - Loading the Data Warehouse**

(0.25 Days) ETL (Extract, Transformation, and Load) - Designing the Staging Area - Data Structures in the ETL System - Data Flow: Extracting, Cleaning and Conforming - Loading Fact Tables - Integrating OLAP Processing into the ETL System - Development Options of ETL - Data Latency - Data Quality

## **E. Dimension Tables**

(0.25 Days) The Basic Structure of a Dimension - The Grain of a Dimension - Flat Dimensions and Snowflaked Dimensions - Date and Time Dimensions - Big and Small Dimensions - Dimensional Roles - Degenerate Dimensions - Slowly Changing Dimensions - Ragged Hierarchies and Bridge Tables

## **F. OLAP and Data Mining**

(0.5 Days) Business Intelligence Applications: Direct Access Query and Reporting Tools, Standard Reports, Analytic Applications, Dashboards and Scorecards - Data Mining: Data Mining Overview, Data Mining in the Applications Architecture



## (ii) Relational Database Systems



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020187  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Administrators,<br>project managers,<br>advanced users |
| <b>Prerequisites</b> | no   |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.             |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 13-14 Aug<br>08-09 Oct<br>03-04 Dec |

Prices plus local taxes.



### Course Description

A relational database is a database that has a collection of tables of data items, all of which is formally described and organized according to the relational model. In the relational model of a database, all data is represented in terms of tuples, grouped into relations. Most relational databases use the SQL data definition and query language; these systems implement what can be regarded as an engineering approximation to the relational model. A table in an SQL database schema corresponds to a predicate variable; the contents of a table to a relation; key constraints, other constraints, and SQL queries correspond to predicates. This training provides you with an overview of the key concepts of the relational model and relational databases. After completing this course, you will be able to design entities and their relationships in a conceptual model and then create a relational table structure based on this first model.



### Course Outline

#### A. Database Design

Abstraction levels for good database design - The requirement analysis - Fundamentals of Entity-Relationship Model - Key - Characterization of relationship types - Existence-dependent entity types - Generalization - Aggregation - Combining generalization and aggregation - Consolidation - Conceptual modeling with UML

#### B. The Relational Model

Definition of the relational model - Mapping a conceptual schema to a relational schema - Refinement of the relational schema - Relational Algebra - The relational calculus

## **C. Relational Query Languages**

History - Data types - Schema definition - Schema change - Basic data manipulation - Simple SQL queries - Queries using multiple relations - Aggregate functions and grouping - Nested queries

## **D. Data Integrity**

Referential Integrity - Ensuring referential integrity - Verification of static integrity constraints - Triggers

## **E. Relational design theory**

Functional dependencies - Key - Determination of functional dependencies - Anomalies - Decomposition of relations - Normalization and Normal Forms

## **F. Transaction Management**

Requirements for transaction management - Transaction types - Properties of transactions - Transaction management in SQL - State transitions of a transaction

## **G. Security Aspects**

Discretionary Access Control - Access Control in SQL - Refinement of the authorization model - Mandatory access control - Multilevel databases - Cryptography

## **H. Object-oriented databases**

Evaluation of relational database systems - Advantages of object-oriented data modeling - Properties of objects - Definition of object types - Modeling the behavior - Type hierarchy

## **I. XML Data Modeling and XML Integration**

Hierarchical modeling using XML - XML integration in relational databases - Storage models - SQL and XML

## A. C# NET



### (i) Oracle and ODP.NET



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020684                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | . NET basics                         |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



#### Course Dates

| Chicago                | Miami                  | New York               |
|------------------------|------------------------|------------------------|
| 1,750.00 USD           | 1,700.00 USD           | 1,750.00 USD           |
| 10-11 Sep<br>12-13 Nov | 17-18 Sep<br>19-20 Nov | 03-04 Sep<br>05-06 Nov |

Prices plus local taxes.



#### Course Description

Oracle Data Provider for .NET (ODP.NET) features optimized ADO.NET data access to the Oracle database. ODP.NET allows developers to take advantage of advanced Oracle database functionality, including Real Application Clusters, XML DB, and advanced security. The data provider can be used with the latest .NET Framework 4.5 version. ODP.NET makes using Oracle from .NET more flexible, faster, and more stable. ODP.NET includes many features not available from other .NET drivers, including a native XML data type, self-tuning, RAC-optimized connection pooling, promotable transactions, and Advanced Queuing. This training shows you how to integrate ODP.NET in your .NET applications so that you can benefit from its features.



#### Course Outline

##### A. Overview of Oracle Data Provider for .NET (ODP.NET)

##### B. Basic Usage Scenarios with ODP.NET

##### C. ODP.NET Assembly

## **D. Installation and Configuration**

## **E. Database Connections**

## **F. Datatypes**

## **G. Forms and OracleDataReader**

## **H. OracleCommand Object**

## **I. Oracle DataAdapter**

## **J. XML Support of ODP.NET**

## **K. ODP.NET Types**

## A. Controlling



### (i) Efforts Estimation of IT Projects



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020934  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project manager, managers, quality assurance coordinators, programmers, developers |
| <b>Prerequisites</b> | Knowledge in software development, project experience                              |
| <b>Method</b>        | Lecture with examples and exercises.   |
| <b>Course level</b>  | Manager  |



#### Course Dates

| Chicago                | Miami                  | New York               |
|------------------------|------------------------|------------------------|
| 1,400.00 USD           | 1,350.00 USD           | 1,400.00 USD           |
| 10-11 Sep<br>12-13 Nov | 24-25 Sep<br>26-27 Nov | 03-04 Sep<br>05-06 Nov |

Prices plus local taxes.



#### Course Description

Efforts estimation for IT projects is the process of predicting the most realistic amount of effort required to carry out an IT project, typically to develop or maintain a software. The estimation is based on incomplete, uncertain and/or noisy input. Effort estimates may be used as input to project plans, iteration plans, budgets, investment analyses, pricing processes and bidding rounds. This training presents an overview of the most common techniques which are all connected to the Function Point Method which serves as a basis for most of these techniques.



#### Course Outline

### A. Introduction

(0.5 Days) Introduction to Software Metrics - Overview of Estimation Techniques - Functional Requirements - Cost and Duration - Cost Effectiveness in Software / IT Projects - Project Costs / Benefit - Project Types - Product Features - Process Properties - Project Risks

## **B. Function Point Method**

(0.5 Days) Categorization of Requirements: Elementary Processes and Data Storage - Classification of Complexity - Calculation of the Unadjusted Function Point Value - Determination of Factors - Calculation of the Adjusted Function Point Value

## **C. COCOMO Method**

(0.5 Days) Definitions and Assumptions of COCOMO - Delivered Source Instructions (DSI) - Determining Complexity - Calculate Costs - Project Duration - Cost Drivers and Factors - New Developments

## **D. Use Case Points**

(0.125 Days) Overview of Use Case Analysis and the Use Case Diagram of UML - Associations between Use Cases and Function Points - Usage of Use Cases for the Calculation of the Expense

## **E. Object Points**

(0.125 Days) Classes, Methods and Properties as Efforts Input - Calculation and Valuation Methods for Class Structures

## **F. Current Trends**

(0.25 Days) Statistical Techniques and Data Mining Techniques for the Analysis of Historical Data and Forecast Future Data





## (ii) Efforts Estimation using Function Point Analysis



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020206  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers, analysts, consultants, quality assurance |
| <b>Prerequisites</b> | General programming skills                                 |
| <b>Method</b>        | Lecture with examples and exercises.                       |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 27-28 Aug<br>15-16 Oct<br>03-04 Dec | 03-04 Sep<br>22-23 Oct<br>10-11 Dec | 10-11 Sep<br>29-30 Oct<br>17-18 Dec |

Prices plus local taxes.



### Course Description

Function Point Analysis is a ISO-standardized technique for software efforts estimation. Here, a function point is a unit of measurement to express the amount of business functionality an information system (as a product) provides to a user. The cost (in dollars or hours) of a single unit is calculated from past projects. The original proposal dates from 1979 (Allan Albrecht at IBM) and has seen many new developments of the last decades. This training teaches you how the FPA method and provides an overview of the five ISO-standards which evolved around the original FPA.



### Course Outline

#### A. Overview of Function Point Analysis

(0.125 Days) Objectives and Benefits of Function Point Analysis - Function Point Counting Procedures - User View: Definition, Sizing During the Life Cycle of an Application, Life Cycle Phase Comparisons

#### B. Types of Function Point Counts, Counting Scope and Application Boundary

(0.125 Days) Definitions of Function Point Counts: Development Project, Enhancement Project, Application - Counting Scope: Definition of the Purpose of the Count, Definition of the Counting Scope - Application Boundary - Counting Scope and Application Boundary Rules and Procedures: Boundary Rules, Counting Scope and Application Boundary Procedures

## **C. Count Data Functions**

(0.5 Days) Definitions: ILFs and EIFs: Internal Logical Files, External Interface Files, Difference between ILFs and EIFs - ILF/EIF Counting Rules: Identification Rules, Complexity and Contribution Definitions and Rules, DET (Data Element Type) and RET (Record Element Type) - ILF/EIF Counting Procedures

## **D. Count Transactional Functions**

(0.5 Days) Definitions: EIs (External Inputs), EOs (External Outputs) and EQs (External Inquiry) - Functions Performed by EIs, EOs and EQs - Processing Logic Used by EIs, EOs and EQs - EI/EO/EQ Counting Rules - EI, EO and EQ Counting Procedures - Elementary Process Identification

## **E. Determine Value Adjustment Factor**

(0.25 Days) Value Adjustment Factor Determination (VAF) - General System Characteristics - Degrees of Influence - Guidelines to Determine Degree of Influence

## **F. Calculate Adjusted Function Point Count**

(0.25 Days) Development Project Function Point Calculation - Enhancement Project Function Point Calculation - Application Function Point Calculation - Application and Conversion Functionality - Application Value Adjustment Factor

## **G. Extensions and New Developments**

(0.25 Days) FPA and Use Cases - FPA and Entity Relationship Modeling - FPA and Data Warehousing - ISO and OMG Standards

## A. DB2



### (i) SQL - Fundamentals



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020297  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 3 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | DB developers,<br>programmers,<br>database<br>administrators |
| <b>Prerequisites</b> | General database<br>knowledge                                |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                   |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,900.00 USD                        | 1,800.00 USD                        | 1,900.00 USD                        |
| 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec |

Prices plus local taxes.



#### Course Description

Das Seminar zeigt angehenden Verwendern von IBM DB2, wie sie mit Hilfe von SQL Daten eintragen (INSERT, MERGE), aktualisieren (UPDATE) oder auch löschen (DELETE) können. Der besondere Schwerpunkt des Seminars liegt auf Abfragen (SELECT) und Analysen von Daten. Dabei werden sowohl die in IBM DB2 nutzbaren Techniken von Standard-SQL gezeigt, aber auch fortgeschrittene und erweiterte Anweisungen.



#### Course Outline

##### A. DB und DB-Objekte

(0.25 Days) Datenbank erstellen - Tabellen und Spalten erstellen, löschen und ändern

##### B. Datenmanipulation

(0.5 Days) Daten erfassen (INSERT) - Daten löschen (DELETE) - Daten aktualisieren (UPDATE) - SELECT DML

## **C. Einfache Abfragen**

(0.25 Days) Struktur der SELECT-Anweisung - Vergleichsoperatoren - Mathematische Operatoren - Logische Operatoren (AND, OR, NOT) - Mengenoperatoren (UNION, INTERSECT, EXCEPT) - Sortierung - Prädikate

## **D. Komplexe Abfragen**

(0.5 Days) Verknüpfungen: Innere und äußere Verknüpfung, Kreuzverknüpfung, Selbstverknüpfung - Unterabfragen: Einfache Unterabfragen, korrelierte Unterabfragen, Unterabfragen in FROM und in der Spaltenliste - Common Table Expressions (CTE)

## **E. Aggregate und Gruppierungen**

(0.25 Days) Standard-Aggregatfunktionen: MIN(), MAX(), SUM(), AVG(), COUNT() - Gruppierungen und Gruppenfilter - Fenster-/Bereichsaggregate: Extremwerte, Kumulierung, gleitende Durchschnitte

## **F. Anwendungsbeispiele von Abfragen**

(0.5 Days) Hierarchische und rekursive Abfragen - Zeit- und Zeitreihen - SQL generieren - Daten generieren - Transponierung und Pivot

## **G. Gespeicherte Abfragen**

(0.25 Days) Sichten - Materialisierte Abfragetabellen - Temporäre Tabellen

## **H. Funktionen verwenden**

(0.5 Days) OLAP-Funktionen: Erweiterung der GROUP BY-Klausel um ROLLUP, GROUPING SETS und CUBE für Untersummen und Gesamtsummen - Ausgewählte wichtige Skalar - und Spaltenfunktionen



## (ii) SQL PL Programming



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020294                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs, database developers            |
| <b>Prerequisites</b> | General database knowledge           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,900.00 USD                        | 1,800.00 USD                        | 1,900.00 USD                        |
| 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec |

Prices plus local taxes.



### Course Description

SQL PL, is a subset of SQL that provides procedural constructs that can be used to implement logic around traditional SQL statements. SQL PL is a high level programming language with a simple syntax, and common programming control statements. SQL PL procedures and functions can contain parameters, variables, assignment-statements, SQL PL control statements, and compound SQL statements. SQL PL procedures also support a powerful condition and error handling mechanism, nested and recursive calls, the returning of multiple result sets to the caller or the client application. This trainings explains you how to use SQL PL for scripting common DB-related tasks or writing functions and procedures with complex logic.



### Course Outline

#### A. Fundamentals of SQL PL

(0.25 Days) Introduction - Usage Scenarios - Variables and Data Types - Mix SQL with SQL PL - Blocks and Labels

#### B. Control Structures

(0.25 Days) Loops (FOR, WHILE, REPEAT, LOOP) - Conditions (IF, CASE) - Program control with GOTO, ITERATE, LEAVE, RETURN

## **C. Cursors**

(0.25 Days) Definition - Processing - Cursors for simple and multiple result sets - Data manipulation and cursor processing - Dynamic cursors

## **D. Errors and Exception Handling**

(0.25 Days) Analysis using SQLCODE and SQLSTATE - Complex exception handling - Custom error messages with SIGNAL and RESIGNAL - Analysis with GET DIAGNOSTICS

## **E. Dynamic SQL**

(0.25 Days) Simple dynamic SQL using EXECUTE IMMEDIATE - Prepared instructions with PREPARE and EXECUTE - Dynamic SQL in cursors

## **F. Procedures**

(0.5 Days) Definition - Parameters - Programming simple and nested procedures - Cursors as return values

## **G. Functions**

(0.25 Days) Definition - Parameters and return values - Scalar functions and Table-valued functions - Using functions in SQL

## **H. Triggers**

(0.5 Days) Definition - Before, After and Instead-Of Triggers - Data integrity through triggers - Triggers on row or on statement level

## **I. Techniques of Application Development**

(0.5 Days) Identity and keys: identity columns, sequences - Versioning of data - Temporary tables - Materialized Query - Transactions: ROLLBACK, COMMIT, and savepoints -



## (iii) XML - Einsatz



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020956  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | DB developers,<br>programmers,<br>database<br>administrators |
| <b>Prerequisites</b> | XML basics   |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                   |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago  | Miami                               | New York                            |
|--|-------------------------------------|-------------------------------------|
| 1,600.00 USD   | 1,550.00 USD                        | 1,600.00 USD                        |
| 06-07 Aug<br>24-25 Sep<br>12-13 Nov<br>31 Dec - 01 Jan | 10-11 Sep<br>29-30 Oct<br>17-18 Dec | 13-14 Aug<br>08-09 Oct<br>26-27 Nov |

Prices plus local taxes.



### Course Description

IBM bietet umfassende Möglichkeiten, XML direkt in der Datenbank zu speichern sowie XML und relationale Daten zu mischen oder gemeinsam zu verwenden. Dieser Kurs gibt einen beispielorientierten Überblick über die verschiedenen Technologien und Verfahren, die mit IBM DB2 im Bereich XML möglich sind: Für den Aufbau von Import-/Export-Schnittstellen lernen Sie die Generierung von XML aus relationalen Daten mit SQL sowie die Zerlegung von XML zu relationalen Daten kennen. Für die erweiterte Nutzung von XML mit SQL und SQL PL sehen Sie, wie Sie direkt in der Datenbank XML mit DTD und XML Schema validieren, mit XSLT umwandeln oder mit XPath und XQuery abfragen.



### Course Outline

#### A. Relationale Daten in XML

(0.5 Days) SQL/XML-Standard - Einfache XML-Dokumente aus relationalen Daten erzeugen - Verschachtelte und komplexe XML-Strukturen erzeugen - Exportschnittstellen mit Sichten und Funktionen

#### B. XML relational zerlegen

(0.5 Days) XML relational zerlegen - XML-Elemente mit XPath auf Spaltenstrukturen übertragen - Designprinzipien für Import-/Export-Schnittstellen - Importschnittstellen mit Prozeduren

## **C. XML speichern und definieren**

(0.75 Days) Tabellen für XML-Speicherung - Speicherformen und Designprinzipien zur Übertragung von XML-Strukturen auf relationale Strukturen - XML-Daten komplett oder teilweise aktualisieren und löschen (XML DML) - Document Access Definition (DAD) für XML-Eigenschaften zur Erstellung und Speicherung von XML Collections - XML und relationale Daten mischen

## **D. XML mit SQL PL verarbeiten**

(0.25 Days) XML in der Datenbank transformieren mit XSLT - XML in der Datenbank abfragen und filtern mit XPath und XQuery - XML validieren mit DTD und XML Schema



## A. Data Mining



### (i) Using MS SQL Server 2012



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2023676                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                                     | New York               |
|-------------------------------------|---|------------------------|
| 2,050.00 USD                        | 1,950.00 USD                              | 2,050.00 USD           |
| 24-26 Aug<br>19-21 Oct<br>14-16 Dec | 31 Aug - 02 Sep<br>26-28 Oct<br>21-23 Dec | 14-16 Sep<br>09-11 Nov |

Prices plus local taxes.



#### Course Description

Microsoft SQL Server Business Intelligence delivers a comprehensive platform empowering organizations to build and deploy secure, scalable, and manageable BI solutions. The Data Mining module provides new business insights, a reliable basis for forecasting and a comprehensive data-mining development environment. The Data Mining Add-ins allow you to harness the power of SQL Server predictive analytics in Excel and Visio. Use Table Analysis Tools to get insight with a couple of clicks. Use the Data Mining tab for full-lifecycle data mining, and build models which can be exported to a production server. Visualize your models in Visio. Microsoft SQL Server Analysis Services provides multiple algorithms for use in your data mining solutions. These algorithms are implementations of some of the most popular methodologies used in data mining. This training covers both the functions of the Data Mining Add-ins and the functions of SQL Server Data Tools. While getting to know the various software modules you will also get familiar with algorithms like Decision Trees, Naive Bayes, Clustering, Neural Networks, or Linear and Logistic Regression.



#### Course Outline

### A. Data Mining and MS SQL Server - Introduction

(0.5 Days) Business Intelligence and Data Mining - Usage Scenarios for Data Mining - Data Mining Techniques in Microsoft SQL Server and MS Excel - Server and Client Components: MS SQL Server Analysis Services and Data Mining Add-Ins for MS Excel and MS Visio - Data Mining Life Cycle and Tasks - Data Mining Techniques in MS SQL Server - Project Cycle (Data Collection, Processing and Cleaning of Data, Modeling, Model Evaluation, Reporting, Forecasting, Integration into Applications, Model Management and Maintenance)

## **B. Classification using Microsoft Decision Trees**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model - DMX Queries - Classification Model, Regression Model, Relationship Model

## **C. Classification using Microsoft Naive Bayes**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model - DMX Queries - Dependency Network, Attribute Profiles, Attribute Characteristics, Attribute Discrimination

## **D. Microsoft Time Series**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Auto Regression, Multiple Time Series, Seasonality, Historic Predictions, Caching Predictions - DMX Queries

## **E. Microsoft Clustering**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Clustering Types, Scalable Clustering, Predictions and Cluster Assignment - DMX Queries: Cluster, Probability, Histograms, CaseLikelihood

## **F. Microsoft Sequence Clustering**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Markov Chains, Transition Matrix, Clustering and Markov Chains, Decomposition - DMX Queries

## **G. Microsoft Association Rules**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Itemset, Support, Probability and Confidence, Interestingness and Importance - DMX Queries

## **H. Microsoft Neural Network**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Combination and Activation, Normalization and Mapping, Topology of a Neural Network , Model Training - DMX Queries

## **I. Scripting for Data Mining**

(0.5 Days) XML/A (XML for Analysis): Generating and Using Scripts, Building, Managing and Training Data Mining Models - DMX (Data Mining Extensions): Building Data Mining Models, Managing, Training, and Querying Data Mining Models

## **J. Data Integration and Reporting Services**

(0.25 Days) Using Data Mining-Models in Integration Services – Using Data Mining Results in Reporting Services



## (ii) Using Oracle 11g



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2023675                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,900.00 USD                        | 1,800.00 USD                              | 1,900.00 USD                        |
| 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov |

Prices plus local taxes.



### Course Description

Oracle Data Mining (ODM) provides powerful data mining functionality as native SQL functions within the Oracle Database. Oracle Data Mining enables users to discover new insights hidden in data and to leverage investments in Oracle Database technology. With Oracle Data Mining, you can build and apply predictive models that help you target your best customers, develop detailed customer profiles, and find and prevent fraud. This training provides you with an overview of the Oracle Data Mining architecture and shows you what kind of Data Mining algorithms you can use for your data analysis. You will get to know each algorithm’s principle and statistical-mathematical background before you see the algorithm being applied to DB data.



### Course Outline

#### A. Data Mining and Oracle

(0.5 Days) Statistics, multivariate statistics and Data Mining - Data Mining cycle - Data preprocessing: Descriptive data aggregation, data cleansing, data integration and transformation - Data Reduction - Discretization and concept hierarchies - Data Mining and Business Intelligence: Databases, Data Warehouses and OLAP as the basis for Data Mining - Oracle architecture for Data Mining: database, Data Mining module and MS Excel add-in

#### B. Factors and influences

(0.5 Days) Factor Analysis and Principal Component Analysis - Outlier Analysis

### **C. Data Mining using Association analysis**

(0.25 Days) Finding frequent patterns (Frequent Itemset Mining) - Apriori algorithm - association rules and association analysis - shopping basket analysis

### **D. Data Mining and Classification**

(0.75 Days) Decision Trees: selection of attributes, tree pruning, deduction of rules, quality measures and comparison of models - Support Vector Machines: algorithms, building and using a model

### **E. Data Mining and Probability Theory**

(0.5 Days) Classification using logistic regression - Probability and Bayes' s Theorem - Naïve Bayes: algorithms, building and using a model

### **F. Cluster Analysis**

(0.5 Days) Introduction to Cluster Analysis - Similarity and distance measurement - Variants and basic techniques - Partitioning methods: k-Means Method - Hierarchical methods: agglomerative and divisive methods

## A. Design Patterns



### (i) C#.NET



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020941  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                              | 1,400.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>10-11 Dec | 03-04 Sep<br>05-06 Nov<br>31 Dec - 01 Jan | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



#### Course Description

A design pattern is a general reusable solution to a commonly occurring problem within a given context in software design. A design pattern is not a finished design that can be transformed directly into source or machine code. It is a description or template for how to solve a problem that can be used in many different situations. Patterns are formalized best practices that the programmer must implement themselves in the application. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. This training presents a selection of the GoF (Gang of Four) patterns which can be used in .NET, PHP or Java and other object-oriented programming languages. After the training you will be capable of defining the basic usage scenarios and situations where these patterns can be helpful and you will be able to apply these patterns to real-world design problems.



## Course Outline

### A. Creational Patterns

Abstract Factory (Provide an interface for creating families of related or dependent objects without specifying their concrete classes.) - Builder (Separate the construction of a complex object from its representation allowing the same construction process to create various representations.) - Factory Method (Define an interface for creating a single object, but let subclasses decide which class to instantiate.) - Prototype (Specify the kinds of objects to create using a prototypical instance, and create new objects by copying this prototype.) - Singleton (Ensure a class has only one instance, and provide a global point of access to it.)

### B. Structural patterns

Adapter (Convert the interface of a class into another interface clients expect.) - Bridge (Decouple an abstraction from its implementation allowing the two to vary independently.) - Composite (Compose objects into tree structures to represent part-whole hierarchies.) - Decorator (Attach additional responsibilities to an object dynamically keeping the same interface.) - Facade (Provide a unified interface to a set of interfaces in a subsystem.) - Flyweight (Use sharing to support large numbers of similar objects efficiently.) - Proxy (Provide a surrogate or placeholder for another object to control access to it.)

### C. Behavioral Patterns

Chain of Responsibility (Avoid coupling the sender of a request to its receiver by giving more than one object a chance to handle the request.) - Command (Encapsulate a request as an object, thereby letting you parameterize clients with different requests.) - Interpreter (Given a language, define a representation for its grammar along with the interpreter.) - Iterator (Provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.) - Mediator (Define an object that encapsulates how a set of objects interact.) - Memento (Without violating encapsulation, capture and externalize an object's internal state allowing the object to be restored to this state later.) - Observer (Define a one-to-many dependency between objects where a state change in one object results in all its dependents being notified and updated automatically.) - State (Allow an object to alter its behavior when its internal state changes.) - Strategy (Define a family of algorithms, encapsulate each one, and make them interchangeable.) - Template Method (Define the skeleton of an algorithm in an operation, deferring some steps to subclasses.) - Visitor (Represent an operation to be performed on the elements of an object structure.)



## (ii) Design Patterns (GoF)



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020940  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                              | 1,400.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>10-11 Dec | 03-04 Sep<br>05-06 Nov<br>31 Dec - 01 Jan | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



### Course Description

A design pattern is a general reusable solution to a commonly occurring problem within a given context in software design. A design pattern is not a finished design that can be transformed directly into source or machine code. It is a description or template for how to solve a problem that can be used in many different situations. Patterns are formalized best practices that the programmer must implement themselves in the application. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. This training presents a selection of the GoF (Gang of Four) patterns which can be used in .NET, PHP or Java and other object-oriented programming languages. After the training you will be capable of defining the basic usage scenarios and situations where these patterns can be helpful and you will be able to apply these patterns to real-world design problems.



## Course Outline

### A. Creational Patterns

Abstract Factory (Provide an interface for creating families of related or dependent objects without specifying their concrete classes.) - Builder (Separate the construction of a complex object from its representation allowing the same construction process to create various representations.) - Factory Method (Define an interface for creating a single object, but let subclasses decide which class to instantiate.) - Prototype (Specify the kinds of objects to create using a prototypical instance, and create new objects by copying this prototype.) - Singleton (Ensure a class has only one instance, and provide a global point of access to it.)

### B. Structural patterns

Adapter (Convert the interface of a class into another interface clients expect.) - Bridge (Decouple an abstraction from its implementation allowing the two to vary independently.) - Composite (Compose objects into tree structures to represent part-whole hierarchies.) - Decorator (Attach additional responsibilities to an object dynamically keeping the same interface.) - Facade (Provide a unified interface to a set of interfaces in a subsystem.) - Flyweight (Use sharing to support large numbers of similar objects efficiently.) - Proxy (Provide a surrogate or placeholder for another object to control access to it.)

### C. Behavioral Patterns

Chain of Responsibility (Avoid coupling the sender of a request to its receiver by giving more than one object a chance to handle the request.) - Command (Encapsulate a request as an object, thereby letting you parameterize clients with different requests.) - Interpreter (Given a language, define a representation for its grammar along with the interpreter.) - Iterator (Provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.) - Mediator (Define an object that encapsulates how a set of objects interact.) - Memento (Without violating encapsulation, capture and externalize an object's internal state allowing the object to be restored to this state later.) - Observer (Define a one-to-many dependency between objects where a state change in one object results in all its dependents being notified and updated automatically.) - State (Allow an object to alter its behavior when its internal state changes.) - Strategy (Define a family of algorithms, encapsulate each one, and make them interchangeable.) - Template Method (Define the skeleton of an algorithm in an operation, deferring some steps to subclasses.) - Visitor (Represent an operation to be performed on the elements of an object structure.)





### (iii) Enterprise Integration Patterns



#### Overview



#### Course Dates

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020348  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 1 Day  |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,  |
| <b>Prerequisites</b> | Basic knowledge of<br>design patterns (GoF<br>Theoretical knowledge<br>of all patterns)<br><br>The necessary know-<br>how is conveyed<br>using clear examples.<br>Practical case studies,<br>individual and group<br>exercises train the<br>transfer from theory<br>to practice and to<br>promote the intensive<br>study of the seminar<br>topic. The individual<br>processing of issues<br>and everyday<br>examples of seminar<br>participants complete<br>the seminar. If<br>necessary, audio and<br>video analysis can<br>be used to optimize<br>performance. In<br>addition, there is the<br>seminar participants /<br>inside an online based<br>post-seminar as a<br>means of transfer<br>backup. |
| <b>Method</b>        |  |
| <b>Course level</b>  | Beginning  |

| Chicago                | Miami                  | New York               |
|------------------------|------------------------|------------------------|
| 1,250.00 USD           | 1,200.00 USD           | 1,250.00 USD           |
| 25-25 Sep<br>27-27 Nov | 28-28 Aug<br>30-30 Oct | 04-04 Sep<br>06-06 Nov |

Prices plus local taxes.



## Course Description

Für die Softwareentwicklung stellt die objektorientierten Analyse und Planung einen grundlegenden Schritt dar, wobei Sie in diesem Seminar die Enterprise Integration Patterns mit dem Schwerpunkt der Nachrichtenzustellung zwischen den Softwarekomponenten kennenlernen werden.



## Course Outline

### **A. Einführung in Enterprise Integration und das Patternkonzept**

Der Nutzen und die Notwendigkeit von Integration in Softwareprojekten - Die Geschichte des EAI - Einführende Beispiele - Einführende Analogien und Erklärungsansätze zum Patternkonzept

### **B. Integrationsstile**

Shared Database - Remote Procedure Invocation - Messaging als Grundkonzept der Enterprise Integration Patterns

### **C. Messaging System**

Der Message-Kanal - Pipelining und Filter - Routing von Nachrichten - Transformation von Nachrichten - Endpunkte des Messaging Systems

### **D. Message Channels**

Punkt-zu-Punkt-Kanäle - Datentypen-Kanal - Kanal zur Fehlerbehandlung - Garantierte Ablaufzusicherung - Nachrichtenbrücke - Nachrichtenbus

### **E. Message Construction und Message Routing**

Command-Nachricht - Dokumenten-Nachricht - Ereignisnachricht - Nachrichtensequenz - Nachrichten-Gültigkeitsablauf - Nachrichtenformat-Indikator - Inhaltsbasiertes Routing - Dynamisches Routing - Empfängerliste - Splitter - Aggregator

### **F. Message Transformation und Message Endpoints**

Wrappen von Nachrichten - Inhaltsabhängiges Filtern - Normalisieren - Das kanonische Datenmodell und seine Bedeutung im Kontext - Nachrichtengateway - Nachrichten-Mapping - Ereignisabhängige Transaktionen - Dispatchen von Nachrichten - Service Activator

### **G. Intergration Patterns in der praktischen Anwendung**

Fallstudie: Preiskalkulationssystem: Erstellen der Architektur - Erstellen der Kanäle für Nachrichten - Lösen auftretender Probleme mit Patterns - Fahren von Datenupdates - Anschub- und Produktivitätsphase - Zusammenfassung



## (iv) Java



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020938  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                               | New York               |
|-------------------------------------|-------------------------------------|------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD           |
| 06-07 Aug<br>01-02 Oct<br>03-04 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 10-11 Sep<br>12-13 Nov |

Prices plus local taxes.



### Course Description

A design pattern is a general reusable solution to a commonly occurring problem within a given context in software design. A design pattern is not a finished design that can be transformed directly into source or machine code. It is a description or template for how to solve a problem that can be used in many different situations. Patterns are formalized best practices that the programmer must implement themselves in the application. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. This training presents a selection of the GoF (Gang of Four) patterns which can be used in .NET, PHP or Java and other object-oriented programming languages. After the training you will be capable of defining the basic usage scenarios and situations where these patterns can be helpful and you will be able to apply these patterns to real-world design problems.



## Course Outline

### A. Creational Patterns

Abstract Factory (Provide an interface for creating families of related or dependent objects without specifying their concrete classes.) - Builder (Separate the construction of a complex object from its representation allowing the same construction process to create various representations.) - Factory Method (Define an interface for creating a single object, but let subclasses decide which class to instantiate.) - Prototype (Specify the kinds of objects to create using a prototypical instance, and create new objects by copying this prototype.) - Singleton (Ensure a class has only one instance, and provide a global point of access to it.)

### B. Structural patterns

Adapter (Convert the interface of a class into another interface clients expect.) - Bridge (Decouple an abstraction from its implementation allowing the two to vary independently.) - Composite (Compose objects into tree structures to represent part-whole hierarchies.) - Decorator (Attach additional responsibilities to an object dynamically keeping the same interface.) - Facade (Provide a unified interface to a set of interfaces in a subsystem.) - Flyweight (Use sharing to support large numbers of similar objects efficiently.) - Proxy (Provide a surrogate or placeholder for another object to control access to it.)

### C. Behavioral Patterns

Chain of Responsibility (Avoid coupling the sender of a request to its receiver by giving more than one object a chance to handle the request.) - Command (Encapsulate a request as an object, thereby letting you parameterize clients with different requests.) - Interpreter (Given a language, define a representation for its grammar along with the interpreter.) - Iterator (Provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.) - Mediator (Define an object that encapsulates how a set of objects interact.) - Memento (Without violating encapsulation, capture and externalize an object's internal state allowing the object to be restored to this state later.) - Observer (Define a one-to-many dependency between objects where a state change in one object results in all its dependents being notified and updated automatically.) - State (Allow an object to alter its behavior when its internal state changes.) - Strategy (Define a family of algorithms, encapsulate each one, and make them interchangeable.) - Template Method (Define the skeleton of an algorithm in an operation, deferring some steps to subclasses.) - Visitor (Represent an operation to be performed on the elements of an object structure.)



## (v) PHP



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020937  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                               | New York               |
|-------------------------------------|-------------------------------------|------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD           |
| 06-07 Aug<br>01-02 Oct<br>03-04 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 10-11 Sep<br>12-13 Nov |

Prices plus local taxes.



### Course Description

A design pattern is a general reusable solution to a commonly occurring problem within a given context in software design. A design pattern is not a finished design that can be transformed directly into source or machine code. It is a description or template for how to solve a problem that can be used in many different situations. Patterns are formalized best practices that the programmer must implement themselves in the application. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. This training presents a selection of the GoF (Gang of Four) patterns which can be used in .NET, PHP or Java and other object-oriented programming languages. After the training you will be capable of defining the basic usage scenarios and situations where these patterns can be helpful and you will be able to apply these patterns to real-world design problems.



## Course Outline

### A. Creational Patterns

Abstract Factory (Provide an interface for creating families of related or dependent objects without specifying their concrete classes.) - Builder (Separate the construction of a complex object from its representation allowing the same construction process to create various representations.) - Factory Method (Define an interface for creating a single object, but let subclasses decide which class to instantiate.) - Prototype (Specify the kinds of objects to create using a prototypical instance, and create new objects by copying this prototype.) - Singleton (Ensure a class has only one instance, and provide a global point of access to it.)

### B. Structural patterns

Adapter (Convert the interface of a class into another interface clients expect.) - Bridge (Decouple an abstraction from its implementation allowing the two to vary independently.) - Composite (Compose objects into tree structures to represent part-whole hierarchies.) - Decorator (Attach additional responsibilities to an object dynamically keeping the same interface.) - Facade (Provide a unified interface to a set of interfaces in a subsystem.) - Flyweight (Use sharing to support large numbers of similar objects efficiently.) - Proxy (Provide a surrogate or placeholder for another object to control access to it.)

### C. Behavioral Patterns

Chain of Responsibility (Avoid coupling the sender of a request to its receiver by giving more than one object a chance to handle the request.) - Command (Encapsulate a request as an object, thereby letting you parameterize clients with different requests.) - Interpreter (Given a language, define a representation for its grammar along with the interpreter.) - Iterator (Provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.) - Mediator (Define an object that encapsulates how a set of objects interact.) - Memento (Without violating encapsulation, capture and externalize an object's internal state allowing the object to be restored to this state later.) - Observer (Define a one-to-many dependency between objects where a state change in one object results in all its dependents being notified and updated automatically.) - State (Allow an object to alter its behavior when its internal state changes.) - Strategy (Define a family of algorithms, encapsulate each one, and make them interchangeable.) - Template Method (Define the skeleton of an algorithm in an operation, deferring some steps to subclasses.) - Visitor (Represent an operation to be performed on the elements of an object structure.)



## (vi) Patterns für Enterprise Application-Architekturen



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020337  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 1 Day  |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,  |
| <b>Prerequisites</b> | Basic knowledge of<br>design patterns (GoF<br>Theoretical knowledge<br>of all patterns)  |
| <b>Method</b>        | Lecture, discussion,<br>individual and group<br>work with exercises.<br>Own work and<br>project issues can be<br>incorporated into the<br>seminar. |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                | Miami                  | New York               |
|------------------------|------------------------|------------------------|
| 1,250.00 USD           | 1,200.00 USD           | 1,250.00 USD           |
| 25-25 Sep<br>27-27 Nov | 28-28 Aug<br>30-30 Oct | 04-04 Sep<br>06-06 Nov |

Prices plus local taxes.



### Course Description

Anhand des De-Facto-Standardwerks im patternbasierten Designen von Unternehmensanwendungen werden Best Practices und Konzepte vorgestellt, die zu erfolgreichen Abschlüssen in Softwareprojekten aller Art führen sollen. Aufgrund einer Reihe von praxisnahen Beispielen wird gezeigt, wie sich große Systeme in Komponenten zerlegen lassen und welche Beziehungen es zwischen diesen gibt. Weiterhin gibt es Antworten zu essenziellen Fragen im Umfeld der Software-Architektur, wie beispielsweise: Wie gestaltet sich der Entwurfsprozess? Welche Methoden und Beschreibungstechniken sind geeignet? Welche erprobten Lösungen gibt es für technische Aspekte wie Transaktionsverwaltung oder Persistenz?



### Course Outline

#### A. Domain Logic Patterns

Transaction Script - Domain Model - Table Module - Service Layer

## **B. Data Source Architectural Patterns**

Table Data Gateway - Row Data Gateway - Active Record - Data Mapper

## **C. Object-Relational Behavioral Patterns**

Unit of Work - Identity Map - Lazy Load

## **D. Object-Relational Structural Patterns**

Identity Field - Foreign Key Mapping - Association Table Mapping - Dependent Mapping - Embedded Value - Serialized LOB - Single Table Inheritance - Class Table Inheritance - Concrete Table Inheritance - Inheritance Mappers

## **E. Object-Relational Metadata Mapping Patterns**

Metadata Mapping - Query Object - Repository

## **F. Web Presentation Patterns**

Remote Facade - Data Transfer Object

## **G. Offline Concurrency Patterns**

Optimistic Offline Lock - Pessimistic Offline Lock - Coarse Grained Lock - Implicit Lock

## **H. Session State Patterns**

Client Session State - Server Session State - Database Session State

## **I. Base Patterns**

Gateway - Mapper - Layer Supertype - Separated Interface - Registry - Value Object - Money - Money - Plugin - Service Stub - Record Set



## A. Enterprise Architect



### (i) BPMN - Business Process Model and Notation



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2023685  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers, systems analysts, programmers, developers, consultants |
| <b>Prerequisites</b> | Knowledge in software development, project experience                    |
| <b>Method</b>        | Lecture with examples and exercises.                                     |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                             | Miami                  | New York                            |
|-------------------------------------|------------------------|-------------------------------------|
| 1,850.00 USD                        | 1,800.00 USD           | 1,850.00 USD                        |
| 20-21 Aug<br>15-16 Oct<br>17-18 Dec | 10-11 Sep<br>12-13 Nov | 06-07 Aug<br>01-02 Oct<br>26-27 Nov |

Prices plus local taxes.



#### Course Description

Business Process Management and Notation (BPMN) is a graphical representation for specifying business processes in a business process model. The primary goal of BPMN is to provide a standard notation readily understandable by all business stakeholders. These include the business analysts who create and refine the processes, the technical developers responsible for implementing them, and the business managers who monitor and manage them. Consequently, BPMN serves as a common language, bridging the communication gap that frequently occurs between business process design and implementation. This training explains the three diagram types of BPMN, their elements and functions, and their correct usage for modeling activities and processes.



#### Course Outline

##### A. Overview

BPMN Scope - BPMN Elements - BPMN Diagram Types - Use of Text, Color, Size, and Lines in a Diagram - Flow Object Connection Rules - BPMN Extensibility

## **B. Collaboration**

Basic Collaboration Concepts - Pool and Participant - Message Flow - Conversations - Process within Collaboration  
- Choreography within Collaboration

## **C. Process**

Basic Process Concepts - Activities - Items and Data - Events - Gateways - Compensation - Lanes - Process Instances,  
Unmodeled Activities, and Public Processes - Auditing - Monitoring

## **D. Choreography**

Basic Choreography Concepts - Data - Use of BPMN Common Elements - Choreography Activities - Events - Gateways  
- Choreography within Collaboration



## (ii) Project Management using UML and BPMN



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2023683  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 4 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers,<br>systems analysts,<br>programmers,<br>developers,<br>consultants |
| <b>Prerequisites</b> | Project Experience   |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.   |
| <b>Course level</b>  | Advanced   |



### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 2,100.00 USD                        | 1,950.00 USD                        | 2,100.00 USD                              |
| 24-27 Aug<br>19-22 Oct<br>14-17 Dec | 07-10 Sep<br>02-05 Nov<br>28-31 Dec | 10-13 Aug<br>05-08 Oct<br>30 Nov - 03 Dec |

Prices plus local taxes.



### Course Description

Enterprise Architect is a visual platform for designing and constructing software systems, for business process modeling, and for more generalized modeling purposes. Enterprise Architect is a progressive tool that covers all aspects of the development cycle, providing full traceability from the initial design phase through to deployment, maintenance, testing and change control. Enterprise Architect helps individuals, groups and large organizations model and manage complex information. Often this relates to software development and IT systems design and deployment, but it can also relate to business analysis and business process modeling. Enterprise Architect integrates and connects a wide range of structural and behavioral information, helping to build a coherent and verifiable architectural model, either what-is or what-will-be. Tools to manage versions, track differences, audit changes and enforce security help control project development and enforce compliance with standards. This training shows you how to make the most out of UML and Enterprise Architect when it comes to software and application development.



### Course Outline

#### A. Requirement Models

(0.25 Days) Create Requirements - View Requirements - Import Requirements Using CSV - Model Requirements - Requirement Properties - Extend Requirement Properties - Connect Requirements - Trace Use Of Requirements - Relationship Matrix - Traceability Window - Manage Requirement Changes - Report on Requirements

## **B. Business Models using BPMN**

(1 Day) Business Process: Pool and Lane, Activity, Event, Data Object and Data Store, Gateway, Message - Choreography - Collaboration - Conversation - BPMN Simulation Using the Model Simulator

## **C. Business Rules**

(0.25 Days) Create a Rule Model - Create a Business Domain Model - Create a Rule Flow Model - Compose Business Rules - Validate Business Rules - Code Generation for Business Rules

## **D. Database Engineering**

(0.25 Days) Data Models (Conceptual, Logical and Physical Models) and Interconnecting Models - Import Database Schema - Generate DDL - Physical Data Model

## **E. Software and Systems Modeling using UML**

(1.25 Days) UML Diagrams - UML Structural Models - UML Behavioral Models - UML Elements - UML Connectors - UML Stereotypes - Design Patterns - UML Profiles

## **F. Projects and Teams**

(0.25 Days) File-Based Repositories - Server-Based Repositories - Team Development - Change Management - Project Management - Project Maintenance - Sharing Reference Data - Reference Data - Team Review Tools - Project Task Allocation - Project Calendar - Reporting - Creating and Monitoring Maintenance Items / Change and Issue Items on Project Elements

## **G. Model Simulation**

(0.25 Days) File-Based Repositories - Server-Based Repositories - Team Development - Change Management - Project Management - Project Maintenance - Sharing Reference Data - Reference Data - Team Review Tools - Project Task Allocation - Project Calendar - Reporting

## **H. Reporting**

(0.5 Days) Specifying Content - RTF / HTML Documentation - Select, Group and Order Packages Together in Virtual Documents - Using the Template Editor - Document Generator



## (iii) UML Modeling



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2023684                                    |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days                                     |
| <b>Delivery mode</b> | Classroom                                  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project manager,<br>team leader            |
| <b>Prerequisites</b> | Project Experience                         |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises. |
| <b>Course level</b>  | Beginning                                  |



### Course Dates

| Chicago                | Miami                               | New York                            |
|------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD           | 1,350.00 USD                        | 1,400.00 USD                        |
| 17-18 Sep<br>12-13 Nov | 06-07 Aug<br>01-02 Oct<br>03-04 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



### Course Description

Unified Modeling Language (UML) is a standardized, general-purpose modeling language in the field of software engineering. The Unified Modeling Language includes a set of graphic notation techniques to create visual models of object-oriented software-intensive systems. Unified Modeling Language (UML) combines techniques from data modeling (entity relationship diagrams), business modeling (work flows), object modeling, and component modeling. Enterprise Architect is a visual platform for designing and constructing software systems, for business process modeling, and for more generalized modeling purposes. This training teaches you how to use UML for modeling software and systems using Enterprise Architect.



### Course Outline

#### A. UML Structure Diagrams: Class / Object Diagram and Package Diagram

(0.75 Days) Diagrams: Class Diagram, Package Diagram, Object Diagram - Node Types: Class, Interface, InstanceSpecification, Package - Path Types: Aggregation, Association, Composition, Dependency, Generalization, InterfaceRealization, Realization, Usage, Package Merge, PackageImport

## **B. UML Structure Diagrams: Composite Structure Diagram, Component Diagram, Deployment Diagram**

(0.5 Days) Component Diagram: Component, Interface, ComponentRealization, Interface Realization, Usage Dependencies, Class, Artifact, Port - Composite Structure Diagram: Part, Port, Collaboration, CollaborationUse, Connector, Role Binding - Deployment Diagram: Artifact, Node, Deployment Specification, Association, Dependency, Generalization, Deployment, Manifestation

## **C. UML Behavior Diagrams: Use Case Diagram and Activity Diagram**

(0.5 Days) Activity Diagram: Action, Activity and ActivityPartition, Modeling the Logical Flow (ControlFlow and ObjectFlow, Nodes: ActivityFinal, ActivityNode, ControlNode, DecisionNode, FinalNode, FlowFinal, ForkNode, InitialNode, JoinNode, MergeNode), Modeling Data (DataStore, ObjectNode), Modeling Containment (InterruptibleActivityRegion, ExceptionHandler, ExpansionRegion) - Use Case Diagram: Actor, Extend/Include Relationship, UseCase

## **D. UML Behavior Diagrams: State Machine Diagram**

(0.25 Days) State Machine, Typology of States (Choice / History / Initial/ Junction Pseudostate, Composite State, Final State), Transition between States, Actions (Receive / Send Signal Action)

## **E. UML Behavior Diagrams: Sequence Diagram and Communication Diagram**

(0.5 Days) Sequence Diagram: Frame, Lifeline, Execution Specification, InteractionUse, CombinedFragment, Continuations, Coregion, Modeling Constraints (TimeConstraint, DurationConstraint, StateInvariant), Modelling Messages (Message, Found / Lost Message) - Communication Diagram: Frame, Lifeline, Message Interchange

## **F. UML Behavior Diagrams: Timing Diagram and Interaction Overview Diagram**

(0.25 Days) Interaction Overview Diagram: Frame, Interaction and InteractionUse - Timing Diagram: Frame, Message, Lifeline, Modeling Time

## **G. Reporting and Documentation**

(0.25 Days) Specifying Content - RTF / HTML Documentation - Select, Group and Order Packages Together in Virtual Documents - Using the Template Editor - Document Generator

## A. Java



### (i) Design Patterns



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020917                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



#### Course Description

A design pattern is a general reusable solution to a commonly occurring problem within a given context in software design. A design pattern is not a finished design that can be transformed directly into source or machine code. It is a description or template for how to solve a problem that can be used in many different situations. Patterns are formalized best practices that the programmer must implement themselves in the application. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. This training presents a selection of the GoF (Gang of Four) patterns which can be used in Java and all other object-oriented programming languages. After the training you will be capable of defining the basic usage scenarios and situations where these patterns can be helpful and you will be able to apply these patterns to real-world design problems.



#### Course Outline

### A. Creational Patterns

Abstract Factory (Provide an interface for creating families of related or dependent objects without specifying their concrete classes.) - Builder (Separate the construction of a complex object from its representation allowing the same construction process to create various representations.) - Factory Method (Define an interface for creating a single object, but let subclasses decide which class to instantiate.) - Prototype (Specify the kinds of objects to create using a prototypical instance, and create new objects by copying this prototype.) - Singleton (Ensure a class has only one instance, and provide a global point of access to it.)

## **B. Structural patterns**

Adapter (Convert the interface of a class into another interface clients expect.) - Bridge (Decouple an abstraction from its implementation allowing the two to vary independently.) - Composite (Compose objects into tree structures to represent part-whole hierarchies.) - Decorator (Attach additional responsibilities to an object dynamically keeping the same interface.) - Facade (Provide a unified interface to a set of interfaces in a subsystem.) - Flyweight (Use sharing to support large numbers of similar objects efficiently.) - Proxy (Provide a surrogate or placeholder for another object to control access to it.)

## **C. Behavioral Patterns**

Chain of Responsibility (Avoid coupling the sender of a request to its receiver by giving more than one object a chance to handle the request.) - Command (Encapsulate a request as an object, thereby letting you parameterize clients with different requests.) - Interpreter (Given a language, define a representation for its grammar along with the interpreter.) - Iterator (Provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.) - Mediator (Define an object that encapsulates how a set of objects interact.) - Memento (Without violating encapsulation, capture and externalize an object's internal state allowing the object to be restored to this state later.) - Observer (Define a one-to-many dependency between objects where a state change in one object results in all its dependents being notified and updated automatically.) - State (Allow an object to alter its behavior when its internal state changes.) - Strategy (Define a family of algorithms, encapsulate each one, and make them interchangeable.) - Template Method (Define the skeleton of an algorithm in an operation, deferring some steps to subclasses.) - Visitor (Represent an operation to be performed on the elements of an object structure.)





## (ii) Fundamentals



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020315                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 5 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, developers              |
| <b>Prerequisites</b> | General computer knowledge           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                | Miami                                     | New York                            |
|------------------------|---|-------------------------------------|
| 2,550.00 USD           | 2,350.00 USD                              | 2,550.00 USD                        |
| 14-18 Sep<br>09-13 Nov | 07-11 Sep<br>02-06 Nov<br>28 Dec - 01 Jan | 24-28 Aug<br>19-23 Oct<br>14-18 Dec |

Prices plus local taxes.



### Course Description

Java is a general-purpose, concurrent, class-based, object-oriented computer programming language that is specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere" (WORA), meaning that code that runs on one platform does not need to be recompiled to run on another. Java is one of the most popular programming languages in use, particularly for client-server web applications. This training provides the Java novice with the necessary fundamental knowledge about the syntax and principles of the Java programming language so that it is possible to choose from a wide range of further trainings with more specialized contents.



### Course Outline

#### A. Language and Principles

(0.5 Days) The Java Programming Environment - Fundamental Programming Structures in Java - Variables - Operators - Input and Output - Control Flow - Arrays

#### B. Objects and Classes

(2 Days) Introduction to Object-Oriented Programming - Using Predefined Classes - Defining Your Own Classes - Static Fields and Methods - Method Parameters - Object Construction - Packages - The Class Path - Documentation Comments - Classes, Superclasses, and Subclasses - Generic Array Lists - Object Wrappers and Autoboxing - Enumeration Classes - Reflection - Interfaces and Inner Classes - Object Cloning - Inner Classes

## **C. Graphics Programming / Streams and Files**

(0.5 Days) Graphics Programming: Introducing Swing, Creating a Frame, Positioning a Frame, Displaying Information in a Component, Working with 2D Shapes, Using Color, Using Special Fonts for Text, Displaying Images - Streams and Files: Streams, Text Input and Output, Reading and Writing Binary Data, ZIP Archives, Object Streams and Serialization, Working with Files

## **D. User Interface Components with Swing**

(0.5 Days) Swing and the Model-View-Controller Design Pattern - Introduction to Layout Management - Text Input - Choice Components - Menus - Dialog Boxes - Event Handling: Basics of Event Handling, Actions, Mouse Events, The AWT Event Hierarchy

## **E. Exceptions, Assertions, Logging, and Debugging**

(0.25 Days) Dealing with Errors - Catching Exceptions - Using Assertions - Logging - Using a Debugger

## **F. Applications**

(0.5 Days) Deploying Applications and Applets - JAR Files - Java Web Start - Applets

## **G. Generic Programming**

(0.25 Days) Generic Programming - Generic Methods - Bounds for Type Variables - Generic Code and the Virtual Machine - Restrictions and Limitations - Inheritance Rules for Generic Types - Wildcard Types - Reflection and Generics

## **H. Database Programming**

(0.5 Days) The Design of JDBC - The Structured Query Language - JDBC Configuration - Executing SQL Statements - Query Execution - Scrollable and Updatable Result Sets - Row Sets - Metadata - Transactions



### (iii) JDBC



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020949                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 20-21 Aug<br>29-30 Oct<br>24-25 Dec |

Prices plus local taxes.



#### Course Description

JDBC is a Java-based data access technology which consists of an API that defines how a client may access a relational database. It provides methods for querying and updating data in a database. JDBC allows multiple implementations to exist and be used by the same application. The API provides a mechanism for dynamically loading the correct Java packages and registering them with the JDBC Driver Manager. The Driver Manager is used as a connection factory for creating JDBC connections. JDBC connections support creating and executing statements. These may be update statements such as SQL's CREATE, INSERT, UPDATE and DELETE, or they may be query statements such as SELECT. Additionally, stored procedures may be invoked through a JDBC connection. This training shows you how to execute various DB-related operations from your Java application.



#### Course Outline

##### A. JDBC Introduction

(0.25 Days) JDBC Architecture - Establishing a Connection - Connecting with DataSource Objects - Handling SQLExceptions

## **B. Performing SQL Operations**

(0.75 Days) Retrieving and Modifying Values from Result Sets: ResultSet Interface, Retrieving Column Values from Rows, Cursors, Updating Rows in ResultSet Objects, Using Statement Objects for Batch Updates, Inserting Rows in ResultSet Objects - Using Prepared Statements: Overview of Prepared Statements, Creating a PreparedStatement Object, Supplying Values for PreparedStatement Parameters - Using Transactions: Auto-Commit Mode, Committing Transactions, Preserving Data Integrity, Setting and Rolling Back to Savepoints, Releasing Savepoints - Using Stored Procedures

## **C. RowSet Objects**

(0.25 Days) Using JdbcRowSet Objects - Using CachedRowSetObjects - Using JoinRowSet Objects - Using FilteredRowSet Objects - Using WebRowSet Objects

## **D. Using SQLXML Objects**

(0.25 Days) Creating SQLXML Objects - Retrieving SQLXML Values in ResultSet - Accessing SQLXML Object Data - Storing SQLXML Objects - Initializing SQLXML Objects - Releasing SQLXML Resources

## **E. JDBC and Object-Relational Extensions in Oracle**

(0.5 Days) Using Array Objects: Creating Array Objects, Retrieving and Accessing Array Values in ResultSet, Storing and Updating Array Objects, Releasing Array Resources - - Using Customized Type Mappings - Using Structured Objects: Overview of Structured Types, Using DISTINCT Type in Structured Types, Using References to Structured Types, Using User-Defined Types as Column Values, Inserting User-Defined Types into Tables



## (iv) Java EE



### Overview

|                      |   |
|----------------------|---|
| <b>Course ID</b>     | 2020919   |
| <b>Language</b>      | en  |
| <b>Duration</b>      | 5 Days  |
| <b>Delivery mode</b> | Classroom   |
| <b>Course Type</b>   |   |
| <b>Target Group</b>  | Programmers, Web developers                           |
| <b>Prerequisites</b> | Knowledge in software development, project experience |
| <b>Method</b>        | Lecture with examples and exercises.                  |
| <b>Course level</b>  | Practitioner  |



### Course Dates

| Chicago                             | Miami                                     | New York                                  |
|-------------------------------------|---|---|
| 2,550.00 USD                        | 2,350.00 USD                              | 2,550.00 USD                              |
| 17-21 Aug<br>12-16 Oct<br>07-11 Dec | 10-14 Aug<br>05-09 Oct<br>30 Nov - 04 Dec | 03-07 Aug<br>28 Sep - 02 Oct<br>23-27 Nov |

Prices plus local taxes.



### Course Description

Java Platform, Enterprise Edition or Java EE is Oracle's enterprise Java computing platform. The platform provides an API and runtime environment for developing and running enterprise software, including network and web services, and other large-scale, multi-tiered, scalable, reliable, and secure network applications. Java EE extends the Java Platform, Standard Edition (Java SE), providing an API for object-relational mapping, distributed and multi-tier architectures, and web services. Java EE includes several API specifications, such as JDBC, RMI, e-mail, JMS, web services, XML, etc., and defines how to coordinate them. The platform incorporates a design based largely on modular components running on an application server. This training provides you with an overview of the Java EE technologies with presentations, case studies and examples as well as some hands-on labs. All in all, it takes you on a tour through the different layers of an enterprise application covering the main technologies and showing their relationships and interdependencies.



### Course Outline

#### A. Web Services

(0.75 Days) Types of Web Services - Introduction to Web Services - Building Web Services with JAX-WS - Building RESTful Web Services with JAX-RS

## **B. Java Servlet Technology**

(0.5 Days) Servlet Lifecycle - Sharing Information - Creating and Initializing a Servlet - Writing Service Methods - Filtering Requests and Responses - Invoking Other Web Resources - Accessing the Web Context - Maintaining Client State - Finalizing a Servlet

## **C. Persistence**

(0.75 Days) Introduction to the Java Persistence API - Running the Persistence Examples - The Java Persistence Query Language - Using the Criteria API to Create Queries - Creating and Using String-Based Criteria Queries - Controlling Concurrent Access to Entity Data with Locking - Using a Second-Level Cache with Java Persistence API Applications

## **D. Java Server Faces-Technologie**

(1.5 Days) JavaServer Faces Technology - Introduction to Facelets - Expression Language - Using JavaServer Faces Technology in Web Pages - Using Converters, Listeners, and Validators - Developing with JavaServer Faces Technology - JavaServer Faces Technology: Advanced Concepts - Using Ajax with JavaServer Faces Technology - Composite Components: Advanced Topics and Example - Creating Custom UI Components and Other Custom Objects - Configuring JavaServer Faces Applications

## **E. Enterprise Beans**

(1 Day) Getting Started with Enterprise Beans - Message-Driven Beans - Using the Embedded Enterprise Bean Container - Using Asynchronous Method Invocation in Session Beans -

## **F. Security**

(0.25 Days) Introduction to Security in the Java EE Platform - Getting Started Securing Web Applications - Getting Started Securing Enterprise Applications

## **G. Case Studies**

(0.25 Days) Duke's Bookstore Case Study Example - Duke's Tutoring Case Study Example -Duke's Forest Case Study Example



## (v) Java Server Pages (JSP)



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020925                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,900.00 USD                        | 1,800.00 USD                              | 1,900.00 USD                        |
| 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov |

Prices plus local taxes.



### Course Description

JavaServer Pages (JSP) is a technology that helps software developers create dynamically generated web pages based on HTML, XML, or other document types. Architecturally, JSP may be viewed as a high-level abstraction of Java servlets. JSPs are translated into servlets at runtime; each JSP's servlet is cached and re-used until the original JSP is modified. JSP can be used independently or as the view component of a server-side model-view-controller design, normally with JavaBeans as the model and Java servlets (or a framework such as Apache Struts) as the controller. JSP allows Java code and certain pre-defined actions to be interleaved with static web markup content, with the resulting page being compiled and executed on the server to deliver a document. This training shows you in many hands-on labs how to develop web applications using JavaServer Pages.



### Course Outline

#### A. Introduction to JavaServer Pages

(1 Day) The Life Cycle of a JSP Page: Translation and Compilation, Execution, Buffering, Handling JSP Page Errors - Creating Static Content: Response and Page Encoding - - Creating Dynamic Content: Using Objects within JSP Pages, Using Implicit Objects, - Using Application-Specific Objects, Using Shared Objects

#### B. Unified Expression Language

(0.5 Days) Immediate and Deferred Evaluation Syntax: Immediate Evaluation, Deferred Evaluation - Value and Method Expressions: Value Expressions, Method Expressions - Defining a Tag Attribute Type - Deactivating Expression Evaluation - Literal Expressions - Resolving Expressions - Implicit Objects - Operators - Functions

## **C. JavaBeans Components**

(0.75 Days) JavaBeans Component Design Conventions - Creating and Using a JavaBeans Component - Setting JavaBeans Component Properties - Retrieving JavaBeans Component Properties

## **D. Using Custom Tags**

(0.75 Days) Declaring Tag Libraries - Including the Tag Library Implementation





## (vi) Server Faces (JSF)



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020868                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



### Course Description

JavaServer Faces (JSF) is a Java specification for building component-based user interfaces for web applications. It was formalized as a standard through the Java Community Process and is part of the Java Platform, Enterprise Edition. JSF is often used together with Ajax, a Rich Internet application technology. Ajax is a combination of technologies that make it possible to create rich user interfaces. Because JSF supports multiple output formats, Ajax-enabled components can easily be added to enrich JSF-based user interfaces. The JSF 2.0 specification provides built in support for Ajax by standardizing the Ajax request lifecycle, and providing simple development interfaces to Ajax events. This training shows you how to use JSF for creating dynamic and interactive front-ends for Java web applications.



### Course Outline

#### A. Introduction

Software Installation - Directory Structure - Build Instructions - Sample Application Analysis - Beans - JSF Pages - Navigation - Servlet Configuration - The Welcome File - Visual Development Environments - JSF Framework Services - Rendering Pages - Decoding Requests - The Life Cycle - Automation of the Build Process with Ant - Using the Deployment Manager with Ant

## **B. Managed Beans**

Definition of a Bean - Bean Properties - Value Binding Expressions - Message Bundles - Backing Beans - Bean Scopes - Request Scope - Session Scope - Application Scope - Configuring Beans - Setting Property Values - Initializing Lists and Maps - Chaining Bean Definitions - String Conversions - The Syntax of Value Binding Expressions - Using Brackets - Map and List Expressions - Resolving the Initial Term - Composite Expressions - Method Binding Expressions

## **C. Navigation**

Static Navigation - Dynamic Navigation - Advanced Navigation Issues - Redirection - Wildcards - Using from-action - The Navigation Algorithm

## **D. Standard JSF Tags**

Forms - Form Elements and JavaScript - Text Fields and Text Areas - Using Text Fields and Text Areas - Displaying Text and Images - Hidden Fields - Buttons and Links - Selection Tags - Checkboxes and Radio Buttons - Menus and Listboxes - Items - Messages - Panels

## **E. Data Tables**

h:dataTable Attributes - Headers and Footers - JSF Components in Table Cells - Editing Table Cells - Styles for Rows and Columns - Styles by Column - Styles by Row - Database Tables - JSTL Result vs. Result Sets - Table Models - Editing Table Models - Sorting and Filtering - Scrolling Techniques - Scrolling with a Scrollbar - Scrolling with Page Widgets

## **F. Conversion and Validation**

Using Standard Converters - Conversion of Numbers and Dates - Conversion Errors - A Complete Converter Example - Using Standard Validators - Validating String Lengths and Numeric Ranges - Checking for Required Values - Displaying Validation Errors - Bypassing Validation - A Complete Validation Example - Programming with Custom Converters and Validators - Implementing Custom Converter Classes - Implementing Custom Validator Classes - Registering Custom Validators - Validating with Bean Methods - Validating Relationships Between Multiple Components - Implementing Custom Tags - Custom Converter Tags - Custom Validator Tags

## **G. Subviews and Tiles**

Common Layouts - Monolithic JSF Pages - Common Content Inclusion - Content Inclusion in JSP-Based Applications - JSF-Specific Considerations - Installing Tiles - Parameterizing Tiles - Extending Tiles - Nested Tiles - Tile Controllers

## **H. Custom Components**

Implementing Custom Components with Classes - Tags and Components - The Custom Component Developers Toolbox - Encoding: Generating Markup - Decoding: Processing Request Values - Using Converters - Implementing Custom Component Tags - Using an External Renderer - Calling Converters from External Renderers - Supporting Value Change Listeners - Supporting Method Bindings - Encoding JavaScript to Avoid Server Roundtrips - Using Child Components and Facets - Processing SelectItem Children - Processing Facets - Including Content - Encoding CSS Styles - Using Hidden Fields - Saving and Restoring State - Firing Action Events - Using the Tabbed Pane



## (vii) Swing



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020926                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,800.00 USD                        | 1,700.00 USD                              | 1,800.00 USD                        |
| 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov |

Prices plus local taxes.



### Course Description

Swing is the primary Java GUI widget toolkit. It is part of Oracle's Java Foundation Classes (JFC) — an API for providing a graphical user interface (GUI) for Java programs. Swing was developed to provide a more sophisticated set of GUI components than the earlier Abstract Window Toolkit (AWT). Swing provides a native look and feel that emulates the look and feel of several platforms, and also supports a pluggable look and feel that allows applications to have a look and feel unrelated to the underlying platform. It has more powerful and flexible components than AWT. In addition to familiar components such as buttons, check boxes and labels, Swing provides several advanced components such as tabbed panel, scroll panes, trees, tables, and lists. Unlike AWT components, Swing components are not implemented by platform-specific code. Instead they are written entirely in Java and therefore are platform-independent. This training helps you to understand the structure of the Swing classes and their handling in order to develop interactive user interfaces. The course makes heavily use of hands-on labs and exercises.



### Course Outline

#### A. Swing Components

(1.25 Days) Graphics Programming: Introducing Swing, Creating a Frame, Positioning a Frame, Displaying Information in a Component, Working with 2D Shapes, Using Color, Using Special Fonts for Text, Displaying Images - Swing and the Model-View-Controller Design Pattern - Text Input - Choice Components - Menus - Dialog Boxes - Lists - Tables - Trees - Text Components - Progress Indicators - Component Organizers and Decorators - Key Bindings - Splash Screens

## **B. Layout Management**

(0.5 Days) Using Layout Managers - BorderLayout - BoxLayout - CardLayout - FlowLayout - GridBagLayout - GridLayout - GroupLayout - GroupLayout - SpringLayout - Custom Layout Managers - Absolute Positioning

## **C. Advanced AWT**

(0.75 Days) The Rendering Pipeline - Shapes - Areas - Strokes - Paint - Coordinate Transformations - Clipping - Transparency and Composition - Rendering Hints - Readers and Writers for Images - Image Manipulation - Printing - The Clipboard - Drag and Drop

## **D. Event Handling**

(0.25 Days) Basics of Event Handling, Actions, Mouse Events, The AWT Event Hierarchy

## **E. Internationalization**

(0.25 Days) Locales - Number Formats - Date and Time - Collation - Message Formatting - Text Files and Character Sets - Resource Bundles



## (viii) Web Services



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020944                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 06-07 Aug<br>01-02 Oct<br>26-27 Nov |

Prices plus local taxes.



### Course Description

A web service is a method of communication between two electronic devices over the World Wide Web. A web service is a software function provided at a network address over the web or the cloud, it is a service that is "always on" as in the concept of utility computing. XML web services use Extensible Markup Language (XML) messages that follow the SOAP standard and have been popular with the traditional enterprises. In such systems, there is often a machine-readable description of the operations offered by the service written in the Web Services Description Language (WSDL).



### Course Outline

#### A. Introduction to Web Services

(0.25 Days) What Are Web Services? - Types of Web Services - Deciding Which Type of Web Service to Use

#### B. Building Web Services with JAX-WS

(0.75 Days) Creating a Simple Web Service and Clients with JAX-WS - Requirements of a JAX-WS Endpoint - Coding the Service Endpoint Implementation Class - Building, Packaging, and Deploying the Service - Testing the Methods of a Web Service Endpoint - A Simple JAX-WS Application Client - A Simple JAX-WS Web Client - Types Supported by JAX-WS: Schema-to-Java Mapping, Java-to-Schema Mapping - Web Services Interoperability and JAX-WS

## **C. Building RESTful Web Services with JAX-RS**

(0.5 Days) What Are RESTful Web Services? - Creating a RESTful Root Resource Class - - Developing RESTful Web Services with JAX-RS - Overview of a JAX-RS Application - Responding to HTTP Methods and Requests - Extracting Request Parameters

## **D. JAX-RS: Advanced Topics**

(0.5 Days) - Annotations for Field and Bean Properties of Resource Classes - Subresources and Runtime Resource Resolution - Integrating JAX-RS with EJB Technology and CDI - Conditional HTTP Requests - Runtime Content Negotiation - Using JAX-RS With JAXB



## (ix) XML



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020945                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                              |
| 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 03-04 Sep<br>29-30 Oct<br>24-25 Dec | 10-11 Sep<br>05-06 Nov<br>31 Dec - 01 Jan |

Prices plus local taxes.



### Course Description

The Java programming language XML APIs consist of the following APIs which are covered in the Java XML training:

a) Java Architecture for XML Binding (JAXB) allows Java developers to map Java classes to XML representations. JAXB provides two main features: the ability to marshal Java objects into XML and the inverse, i.e. to unmarshal XML back into Java objects. The Java API for XML Processing, or JAXP provides the capability of validating and parsing XML documents using b) the Document Object Model parsing interface or DOM interface, and c) the Streaming API for XML or StAX interface. d) The XQJ API enables Java programmers to execute XQuery against an XML data source. It provides an interface to the XQuery Data Model. You will learn to use these technologies in many hands-on labs and exercises after familiarizing yourself with the most important aspects of the different XML technologies.



### Course Outline

#### A. Introduction to XML Standards

(0.25 Days) XML - Validation and Modelling using DTD and XML Schema - Transformation using XSLT - Querying XML using XPath and XQuery

#### B. Java API for XML Processing (JAXP) and DOM

(0.5 Days) Overview of the Document Object Model (DOM) - Creating Documents, Elements, Attributes and other Nodes - Reading XML - Validating XML Documents - Querying XML using XPath and DOM Methods - Manipulating XML Data

### **C. Java API for XML Processing (JAXP) and XSLT**

(0.25 Days) Using XSLT from Java - Passing Parameters to XSLT Stylesheets

### **D. Java Architecture for XML Binding (JAXB)**

(0.5 Days) JAXB Architecture - JAXB Binding Framework - Binding XML Schemas - Customizing JAXB Bindings - Representing XML Content - Marshaling and Unmarshaling

### **E. Java API for XQuery (XQJ)**

(0.25 Days) Creating and Executing XQuery Expressions - Casting Atomic XQuery Items to Java Primitives - Processing Result Sequencec (XDM)

### **F. Streaming XML processing (StAX)**

(0.25 Days) Creating Documents, Elements, Attributes and other Nodes - Reading XML Documents



## A. MS SQL Server 2012



### (i) Administration and Maintenance



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020814                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 5 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs                                 |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                                     | New York                                  |
|-------------------------------------|---|---|
| 2,850.00 USD                        | 2,650.00 USD                              | 2,850.00 USD                              |
| 17-21 Aug<br>12-16 Oct<br>07-11 Dec | 10-14 Aug<br>05-09 Oct<br>30 Nov - 04 Dec | 03-07 Aug<br>28 Sep - 02 Oct<br>23-27 Nov |

Prices plus local taxes.



#### Course Description

This SQL Server 2012 Database training provides students with the knowledge and skills to maintain a Microsoft SQL Server 2012 database. The course focuses on teaching individuals how to use SQL Server 2012 product features and tools related to maintaining a database. Also this course helps you prepare for the Exam 70-462. The course is intended for individuals who administer and maintain SQL Server databases. These individuals perform database administration and maintenance as their primary area of responsibility, or work in environments where databases play a key role in their primary job. This SQL Server 2012 Database training is also intended for individuals who develop applications that deliver content from SQL Server databases.



#### Course Outline

##### A. Working with Databases

Overview of SQL Server Architecture - Overview of SQL Server Databases - Working with Files and Filegroups - Moving Database Files

##### B. Backup and Recovery

Backup Strategies - Understanding SQL Server Transaction Logging - Planning a SQL Server Backup Strategy - Backing up Databases and Transaction Logs - Managing Database Backups - Working with Backup Options - Understanding the Restore Process - Restoring Databases - Working with Point-in-time recovery - Restoring System Databases and Individual Files

## **C. Importing and Exporting Data**

Transferring Data To/From SQL Server - Importing and Exporting Table Data - Inserting Data in Bulk

## **D. Authenticating and Authorizing Users**

Authenticating Connections to SQL Server - Authorizing Logins to Access Databases - Authorization Across Servers - Working with Server Roles - Working with Fixed Database Roles - Creating User-defined Database Roles - Authorizing User Access to Objects - Authorizing Users to Execute Code - Configuring Permissions at the Schema Level

## **E. Automating SQL Server 2012 Management**

Automating SQL Server Management - Working with SQL Server Agent - Managing SQL Server Agent Jobs - Understanding SQL Server Agent Security - Configuring Credentials C. Configuring Proxy Accounts

## **F. Performing Ongoing Database Maintenance**

Ensuring Database Integrity - Maintaining Indexes - Automating Routine Database Maintenance - Capturing Activity using SQL Server Profiler - Improving Performance with the Database Engine Tuning Advisor - Working with Tracing Options - Monitoring Activity - Capturing and Managing Performance Data - Analyzing Collected Performance Data



## (ii) Analysis Services (SSAS), OLAP and Data Warehousing



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020963                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                                   | Miami                               | New York                            |
|---|-------------------------------------|-------------------------------------|
| 1,900.00 USD                              | 1,800.00 USD                        | 1,900.00 USD                        |
| 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 07-09 Sep<br>02-04 Nov<br>28-30 Dec |

Prices plus local taxes.



### Course Description

Microsoft SQL Server Analysis Services, SSAS, is an Online Analytical Processing, OLAP, data mining and reporting tool in Microsoft SQL Server. SSAS is used as a tool by organizations to analyze and make sense of information possibly spread out across multiple databases, or in disparate tables. This training teaches you how to use SQL Server Analysis Services for business intelligence. You'll start by building your understanding of the business intelligence platform enabled by SQL Server and the Microsoft Office System, highlighting the role of Analysis Services. Then, you'll create a simple multidimensional OLAP cube and progressively add features to help improve, secure, deploy, and maintain an Analysis Services database. You'll explore core Analysis Services features and capabilities, including dimension, cube, and aggregation design wizards; the attribute relationship designer; and using dynamic management views to monitor resources.



### Course Outline

#### A. OLAP and SQL Server Analysis Services (SSAS)

(0.25 Days) Business Intelligence - Multidimensional Data Analysis - Dimensional Data Warehouse - Multidimensional OLAP - Analysis Services and the Microsoft Business Intelligence Platform

#### B. Working with Dimensions

(0.5 Days) Previewing Dimension Data - Creating a Standard Dimension - Creating a Time Dimension - Creating a Parent-Child Dimension - Dimension Usage - Creating Reference Dimensions - Creating a Fact Dimension - Creating a Many-to-Many Dimension

## **C. Working with Measures and Measure Groups**

(0.25 Days) Creating a Business Intelligence Solution - Creating a Data Source - Creating a Data Source View - Previewing Cube Data - Using the Wizard to Create a Cube - Deploying and Browsing a Cube - Using the Cube Designer to Modify a Cube - Using Aggregate Functions

## **D. Retrieving Data from Analysis Services using MDX, MS Excel, and Reporting**

(0.25 Days) Creating Perspectives - Creating MDX Queries - Accessing Analysis Services Using Excel - Creating Reporting Services Reports

## **E. Extending Cube-Functionality**

(0.25 Days) Key Performance Indicators (KPI) - Implementing Actions - - Using MDX to Retrieve Values from a Cube - Creating Calculated Members - Calculation Scripting

## **F. Deployment and Security of an Analysis Services Solution**

(0.25 Days) Deployment Overview - Deployment Mechanics - Deployment Using Business Intelligence Development Studio - Deployment Using the Deployment Wizard - Understanding Deployment Scripts - Migrating Databases and Disaster Recovery - Implementing Security: Understanding Roles - Securing Administrative Access - Securing Data Access

## **G. Administering a Multidimensional Solution**

(0.25 Days) Monitoring Analysis Services Using Windows Reliability And Performance Monitor - Monitoring Analysis Services Using SQL Server Profiler - Analysis Services Dynamic Management Views - Managing Partitions and Database Processing: Working with Storage - Managing Analysis Services Processing - Working with Partitions



## (iii) Analysis Services and MDX



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020282  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom                                      |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Business Intelligence Developer                |
| <b>Prerequisites</b> | Experience with Business Intelligence concepts |
| <b>Method</b>        | Lecture with examples and exercises.           |
| <b>Course level</b>  | Beginning                                      |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 13-14 Aug<br>08-09 Oct<br>03-04 Dec |

Prices plus local taxes.



### Course Description

Multidimensional Expressions (MDX) is a query language for OLAP databases, much like SQL is a query language for relational databases. It is also a calculation language, with syntax similar to spreadsheet formulas. This training teaches you the Multidimensional Expressions (MDX) query language. With this practical, learn-by-doing course you'll build the core techniques for using MDX with Analysis Services to deliver high-performance business intelligence solutions. Discover how to construct and execute MDX queries, work with tuples, sets, and expressions, build complex sets to retrieve the exact data users need, perform aggregation functions and navigate data hierarchies, and assemble time-based business metrics.



### Course Outline

#### A. Introduction to MDX in Analysis Services

(0.25 Days) MDX Language - MDX-Query-Editor in MS SQL Server Management Studio - Simple MDX Queries

## **B. Tuples and OLAP-Cubes**

(0.75 Days) N-dimensional Space - Cube Space - Accessing Data with Tuples - - Understanding Cells - Working with Partial Tuples - Building Tuples with User-Hierarchies - Set Basics - Understanding the SELECT Statement - Building Sets with Functions - Filtering Sets - Combining Sets - Performing Aggregation: Performing Summation, Calculating Averages, Identifying Minimum and Maximum Values, Counting Tuples in Sets - Working with Time: Understanding the Time Dimension, Calculating an Accumulating Total, Performing Period-over-Period Analysis, Combining Time-Based Metrics

## **C. Enhancing the Cube using MDX**

(0.5 Days) Understanding the MDX Script - Constructing Calculated Members - Assembling Named Sets

## **D. MDX and Analysis Services-Security**

(0.25 Days) Understanding Dynamic Security - Implementing Attribute-Hierarchy Restrictions - Implementing Cell-Level Restrictions

## **E. Building Reports using MDX**

(0.25 Days) Connecting to Analysis Services - Designing the Dataset - Adding Parameters to the Dataset - Presenting the Data in the Report



## (iv) Business Intelligence - Compact



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020295  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 5 Days   |
| <b>Delivery mode</b> | Classroom                                      |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Business Intelligence Developer                |
| <b>Prerequisites</b> | Experience with Business Intelligence concepts |
| <b>Method</b>        | Lecture with examples and exercises.           |
| <b>Course level</b>  | Beginning                                      |



### Course Dates

| Chicago                                   | Miami                                     | New York                                  |
|---|---|---|
| 2,850.00 USD                              | 2,650.00 USD                              | 2,850.00 USD                              |
| 07-11 Sep<br>02-06 Nov<br>28 Dec - 01 Jan | 03-07 Aug<br>28 Sep - 02 Oct<br>23-27 Nov | 10-14 Aug<br>05-09 Oct<br>30 Nov - 04 Dec |

Prices plus local taxes.



### Course Description

Microsoft SQL Server Analysis Services is a platform for building rich and high performance analytical models (multidimensional, tabular and data mining) that can be used for interactive data analysis, reporting, visualization and predictive analysis using a number of BI tools. Integration Services helps you connect and transform disparate data sources with a scalable enterprise data integration platform with exceptional extract, transform, and load (ETL) capabilities. Reporting Services is a platform for development and deployment of professionally looking, richly formatted operational and ad-hoc reports. Power View empowers users to rapidly explore data visually and interactively, easily create a story, present, and share reports effortlessly. This training takes you on a tour through all SQL Server products which are useful and necessary for building Data Warehouse and Reporting Solutions.



### Course Outline

#### A. Business Intelligence, Data Warehousing and OLAP

(0.25 Days) Business Intelligence - Fundamentals of Data Warehousing und OLAP - Typical DW Data Models - Microsoft's Architecture and Tools for Business Intelligence - Project Types and Project Phases for Business Intelligence - Life Cycle of BI-Solutions using MS SQL Server

## **B. OLAP and Data Warehousing using Analysis Services**

(2 Days) Dimensions: Creation and Deployment, Hierarchies and Aggregation, Typology of Dimensions: Time, Currency, Language, Validity - Measures: Creation and Deployment, Storage Models, Calculated Measures with MDX - OLAP Cubes: Creation and Deployment, Security Model, MS Excel and Cube Access - Overview of Advanced Scenarios (Interactivity and Key Performance Indicators (KPI))

## **C. Data Integration and ETL using Integration Services**

(1.5 Days) SSIS Packages - Control Flow Tasks - Precedence Constraints - Data Flow Paths - Data Viewer - Configuring Error Output - Using Variables - Processing of Excel, Text, and XML Files - MS SQL Queries - Logging - Error Handling - Package Configuration - Deployment

## **D. Reports using Reporting Services and MS Excel**

(1.25 Days) Interactivity: OLAP Operations - Report Elements: Table, Matrix, Chart, Subreports - Datasets: Data Sources and Queries - Parameters and Filters - Deployment: Report Portal, Report Snapshots and Caching, Subscriptions





## (v) Business Intelligence using Tabular Model



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2022784                                    |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days                                     |
| <b>Delivery mode</b> | Classroom                                  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | IT professionals,<br>information workers   |
| <b>Prerequisites</b> | Bases MS SQL Server                        |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises. |
| <b>Course level</b>  | Advanced                                   |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 06-07 Aug<br>01-02 Oct<br>26-27 Nov |

Prices plus local taxes.



### Course Description

Tabular models are in-memory databases in Analysis Services. They can be used by reporting client applications such as Microsoft Excel and Microsoft Power View. Tabular models support data access through two modes: Cached mode and DirectQuery mode. In cached mode, you can integrate data from multiple sources including relational databases, data feeds, and flat text files. In DirectQuery mode, you can bypass the in-memory model, allowing client applications to query data directly at the (SQL Server relational) source. Tabular models are authored in SQL Server Data Tools (SSDT) using new tabular model project templates. You can import data from multiple sources, and then enrich the model by adding relationships, calculated columns, measures, KPIs, and hierarchies. Models can then be deployed to an instance of Analysis Services where client reporting applications can connect to them. Deployed models can be managed in SQL Server Management Studio just like multidimensional models. They can also be partitioned for optimized processing and secured to the row-level by using role based security.



### Course Outline

#### A. Tabular Model-Introduction

(0.5 Days) Tabular Model Designer - Project Templates - Workspace Database - Tabular Model Projects - Data Sources - DirectQuery Mode - Using SSMS to Manage the Workspace Database

## **B. Creation of a Tabular Model**

(0.5 Days) Working with tables and columns - Filter and Sort Data - Relationships: Manually Create Relationships , Inference of Relationships, Duplicate Values and Other Errors - Change table, column, or row filter mappings - Calculations - Measures - Create and Manage KPIs (Key Performance Indicator) - Hierarchies

## **C. Advanced Modeling Techniques**

(0.25 Days) Partitions: Processing Partitions, Partitions in the Model Workspace Database, Partitions in a deployed model database - Create and Manage Perspectives

## **D. Security**

(0.25 Days) Understanding Roles - Permissions - Row Filters - Testing Roles

## **E. Reports and Deployment**

(0.5 Days) Analyze a Tabular Model in Excel - Tabular Model Solution Deployment - Deploying a Tabular Model - Deployment Properties - Deployment Methods - Configuring the Deployment Server and Connecting to a Deployed Model



## (vi) Data Mining



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020998                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                                   | Miami                               | New York                            |
|---|-------------------------------------|-------------------------------------|
| 2,050.00 USD                              | 1,950.00 USD                        | 2,050.00 USD                        |
| 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 07-09 Sep<br>02-04 Nov<br>28-30 Dec |

Prices plus local taxes.



### Course Description

Microsoft SQL Server Business Intelligence delivers a comprehensive platform empowering organizations to build and deploy secure, scalable, and manageable BI solutions. The Data Mining module provides new business insights, a reliable basis for forecasting and a comprehensive data-mining development environment. The Data Mining Add-ins allow you to harness the power of SQL Server predictive analytics in Excel and Visio. Use Table Analysis Tools to get insight with a couple of clicks. Use the Data Mining tab for full-lifecycle data mining, and build models which can be exported to a production server. Visualize your models in Visio. Microsoft SQL Server Analysis Services provides multiple algorithms for use in your data mining solutions. These algorithms are implementations of some of the most popular methodologies used in data mining. This training covers both the functions of the Data Mining Add-ins and the functions of SQL Server Data Tools. While getting to know the various software modules you will also get familiar with algorithms like Decision Trees, Naive Bayes, Clustering, Neural Networks, or Linear and Logistic Regression.



### Course Outline

#### A. Data Mining and MS SQL Server - Introduction

(0.5 Days) Business Intelligence and Data Mining - Usage Scenarios for Data Mining - Data Mining Techniques in Microsoft SQL Server and MS Excel - Server and Client Components: MS SQL Server Analysis Services and Data Mining Add-Ins for MS Excel and MS Visio - Data Mining Life Cycle and Tasks - Data Mining Techniques in MS SQL Server - Project Cycle (Data Collection, Processing and Cleaning of Data, Modeling, Model Evaluation, Reporting, Forecasting, Integration into Applications, Model Management and Maintenance)

## **B. Classification using Microsoft Decision Trees**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model - DMX Queries - Classification Model, Regression Model, Relationship Model

## **C. Classification using Microsoft Naive Bayes**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model - DMX Queries - Dependency Network, Attribute Profiles, Attribute Characteristics, Attribute Discrimination

## **D. Microsoft Time Series**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Auto Regression, Multiple Time Series, Seasonality, Historic Predictions, Caching Predictions - DMX Queries

## **E. Microsoft Clustering**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Clustering Types, Scalable Clustering, Predictions and Cluster Assignment - DMX Queries: Cluster, Probability, Histograms, CaseLikelihood

## **F. Microsoft Sequence Clustering**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Markov Chains, Transition Matrix, Clustering and Markov Chains, Decomposition - DMX Queries

## **G. Microsoft Association Rules**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Itemset, Support, Probability and Confidence, Interestingness and Importance - DMX Queries

## **H. Microsoft Neural Network**

(0.25 Days) Introduction to the Algorithm - Parameters - Building a Model and Using the Model: Combination and Activation, Normalization and Mapping, Topology of a Neural Network , Model Training - DMX Queries

## **I. Scripting for Data Mining**

(0.5 Days) XML/A (XML for Analysis): Generating and Using Scripts, Building, Managing and Training Data Mining Models - DMX (Data Mining Extensions): Building Data Mining Models, Managing, Training, and Querying Data Mining Models

## **J. Data Integration and Reporting Services**

(0.25 Days) Using Data Mining-Models in Integration Services – Using Data Mining Results in Reporting Services



## (vii) Integration Services (SSIS) and ETL



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020875                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,900.00 USD                        | 1,800.00 USD                        | 1,900.00 USD                        |
| 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec |

Prices plus local taxes.



### Course Description

SSIS is a platform for data integration and workflow applications. It features a fast and flexible data warehousing tool used for data extraction, transformation, and loading (ETL). The tool may also be used to automate maintenance of SQL Server databases and updates to multidimensional cube data. This training teaches you the fundamentals of SQL Server Integration Services. This practical, learn-by-doing course delivers the guidance you need to transform and consolidate data and build solutions that support your business intelligence needs. Discover how to design and execute packages that transform data between files and relational databases, configure connection managers to access other data sources, create data flows that alter, split, match, and merge data, develop event-handlers and monitor package performance or debug, troubleshoot, and optimize packages.



### Course Outline

#### A. Introduction to SQL Server Integration Services

(0.25 Days) Common SSIS Applications - SSIS Objects and Process Control Components - SSIS Process Control - SSIS Components -

#### B. Development of an Integration Services Solution

(1.25 Days) Extracting and Loading Data: Connection Managers, Using Data Sources and Data Source Views - Using Data Flow Transformations: Creating Data Flow in a Package - SSIS Transformations, Using Expressions in Packages, Using Data Flow Transformations, Configuring Error Output - Managing Control Flow - Control Flow Elements

## **C. Populating Data Warehouse Structures**

(0.5 Days) Data Warehouse Characteristics - Implementing Staging Tables - - Types of Staging Schemes - Managing Dimension Tables - Slowly Changing Dimensions - Managing Fact Tables

## **D. Debugging Packages**

(0.25 Days) Debugging Control Flow - Debugging Data Flow - Detecting and Handling Processing Errors: Basic Error Detection and Handling, Understanding Event Handlers, Creating Event Handlers, Maintaining Data Consistency with Transactions, Using Checkpoint Restarts, Using Checkpoints and Transactions

## **E. Checkpoints and Transactions**

(0.25 Days) Basic Error Detection and Handling: Understanding Event Handlers, - Creating Event Handlers - Maintaining Data Consistency with Transactions - Using Checkpoint Restarts - Using Checkpoints and Transactions

## **F. Securing, Optimizing, and Deploying SSIS Packages**

(0.5 Days) Creating a Deployment Utility: Securing a Package, Role-Based Security - Deployment Options, Creating and Applying a Configuration, Executing a Deployed Package, - Monitoring Package Execution and Event Logs - Optimizing SSIS Packages: SSIS Engine Overview, Synchronous and Asynchronous Processing, Data Blocking, Managing Parallelism, Performance Management



## (viii) Reporting Services (SSRS)



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020881                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 20-21 Aug<br>15-16 Oct<br>10-11 Dec |

Prices plus local taxes.



### Course Description

SQL Server Reporting Services (SSRS) is a server-based report generation software system built in MS SQL Server. Administered via a web interface, it can be used to prepare and deliver a variety of interactive and printed reports. This training teaches you how to build, manage, and access SQL Server reports. Whether you're a report developer, IT administrator, or business user, this course shows you how to deliver the business intelligence information your organization needs. Discover how to use Report Builder and Report Designer tools, create interactive, online reports that enable users to sort and filter data, add charts and gauges to present data visually, and deploy reports securely to the Reports Server or distribute reports via subscriptions.



### Course Outline

#### A. Introduction to SQL Server Reporting Services

(0.25 Days) Reporting Life Cycle - Reporting Services Architecture - Tools: Report Designer, Report Manager and MS Visual Studio

#### B. Simple Reports

(0.5 Days) Developing a Simple Report - Managing a Report - Viewing a Report - - Adding Calculations to a Report - Using Aggregate Functions - Changing Report Item Properties by Using Expressions - Working with Variables - Using Expressions for Dynamic Connections and Datasets - Developing Expressions for Hierarchical Data

## **C. Complex Reports**

(0.75 Days) Adding Interactivity: Changing the Report Layout Interactively, - Working with Parameters, Adding Navigation Features - Using Analysis Services as a Data Source: Installing the Sample Database, Creating an Analysis Services Dataset, Designing Parameters - Visualizing Data: Creating Charts, Working with Gauges

## **D. Deploying Reports to a Server**

(0.25 Days) Reviewing Deployment Options - Managing Content - Configuring Data Source Properties - Configuring Report Execution Properties - Securing Report Server Content - Configuring Report Server Security Policies: Assigning User Permissions, Configuring Item-Level Security, Implementing Data Security - Working with Subscriptions: Creating Standard Subscriptions, Creating Data-Driven Subscriptions, Managing Subscriptions

## **E. Performing Administrative Tasks**

(0.25 Days) Using Management Tools - Configuring the Report Server - Monitoring the Report Server





## (ix) T-SQL 1 - Queries and Analyses



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020906                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs, database developers            |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,900.00 USD                        | 1,800.00 USD                              | 1,900.00 USD                        |
| 24-26 Aug<br>19-21 Oct<br>14-16 Dec | 31 Aug - 02 Sep<br>26-28 Oct<br>21-23 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov |

Prices plus local taxes.



### Course Description

This 3-day instructor led course provides students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server. This course is intended for SQL Server database administrators, implementers, system engineers, and developers who are responsible for writing queries. After completing this course, students will be able to: a) Describe the uses of and ways to execute the Transact-SQL language, b) Use querying tool, c) Write SELECT queries to retrieve data, d) Group and summarize data by using Transact-SQL, e) Join data from multiple tables, f) Write queries that retrieve and modify data by using subqueries, g) Modify data in tables or h) Use various techniques when working with complex queries.



### Course Outline

#### A. Getting Started with Databases and Transact-SQL in SQL Server

(0.25 Days) Overview of SQL Server - Overview of SQL Server Databases - Overview and Syntax Elements of T-SQL - Working with T-SQL Scripts - Using T-SQL Querying Tools

#### B. Querying and Filtering Data

(0.5 Days) Using the SELECT Statement - Filtering Data - Working with NULL Values - Formatting Result Sets - Performance Considerations for Writing Queries

## **C. Grouping and Summarizing Data**

(0.25 Days) Summarizing Data by Using Aggregate Functions - Summarizing Grouped Data - Ranking Grouped Data - Creating Crosstab Queries

## **D. Joining Data from Multiple Tables**

(0.25 Days) Querying Multiple Tables by Using Joins - Applying Joins for Typical Reporting Needs - Combining and Limiting Result Set

## **E. Working with Subqueries**

(0.25 Days) Writing Basic Subqueries - Writing Correlated Subqueries - Comparing Subqueries with Joins and Temporary Tables - Using Common Table Expressions

## **F. Analysen**

(0.5 Days) Querying Hierarchies - Moving (Centered) Averages - Window Aggregates - Accumulation - (Un) Pivoting of Data

## **G. Modifying Data in Tables**

(0.5 Days) Inserting Data into Tables - Deleting Data from Tables - Updating Data in Tables - Overview of Transactions

## **H. Using Advanced Querying Techniques**

(0.5 Days) Considerations for Querying Data - Working with Data Types - Cursors and Set-Based Queries - Dynamic SQL - Maintaining Query Files - Overview of Views - Overview of User-Defined Functions - Overview of Stored Procedures - Overview of Triggers - Querying Metadata - Querying XML Data



## (x) T-SQL 2 - Implementing and Programming



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020959                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs, database developers            |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                | Miami                        | New York                            |
|------------------------|------------------------------|-------------------------------------|
| 1,900.00 USD           | 1,800.00 USD                 | 1,900.00 USD                        |
| 14-16 Sep<br>16-18 Nov | 21-23 Sep<br>30 Nov - 02 Dec | 24-26 Aug<br>19-21 Oct<br>14-16 Dec |

Prices plus local taxes.



### Course Description

This 3-day instructor-led course is intended for Microsoft SQL Server database developers who are responsible for implementing a database on SQL Server. In this course, students learn the skills and best practices on how to use SQL Server product features and tools related to implementing a database server. This course is intended for IT Professionals who want to become skilled on SQL Server 2008 R2 product features and technologies for implementing a database. To be successful in this course, the student should have knowledge of basic relational database concepts and writing T-SQL queries. After completing this course, students will be able to: a) Understand the product, its components, and basic configuration, b) Work with the data types supported by SQL Server, c) Design and implement tables and work with schemas / Design and implement views and partitioned views, f) Describe the concept of an index and determine the appropriate data type for indexes and composite index structures / Identify the appropriate table structures and implement clustered indexes and heaps, g) Describe and capture execution plans, h) Describe transactions, transaction isolation levels, or i) Design and implement scalar and table-valued functions, stored procedures, triggers.



### Course Outline

#### A. Designing and Implementing Databases, Tables/Views and Files

(0.5 Days) Introduction to SQL Server Platform - Working with SQL Server Tools - Configuring SQL Server Services - Data Types: Using Data Types, Converting Data Types - Tables: Designing Tables, Working with Schemas, Creating and Altering Tables - Views: Introduction to Views, Creating and Managing Views, Performance Considerations for Views

## **B. Data Manipulation and Optimization/Tuning**

(0.25 Days) Inserting, Updating, and Deleting Data - Execution Plan Core Concepts - Common Execution Plan Elements - Designing Effective (Non-)Clustered Indexes - Using the Database Engine Tuning Advisor

## **C. T-SQL Programming**

(0.75 Days) Variables - Control Structure - Dynamic SQL - Transactions - Exceptions and T-SQL Error Handling - Cursors

## **D. Implementing Procedures and Functions**

(0.5 Days) User-Defined Functions: Designing and Implementing Scalar Functions, Designing and Implementing Table-valued Functions - Introduction to Stored Procedures - Working With Stored Procedures - Implementing Parameterized Stored Procedures

## **E. Ensuring Data Integrity through Constraints and Triggers**

(0.25 Days) Enforcing Data Integrity - Implementing Domain Integrity - Implementing Entity and Referential Integrity - Implementing DML Triggers

## **F. Security**

(0.25 Days) SQL Server's Security Concepts - Defining and Using Logins, Users and Roles

## **G. Data Import/Export and Backup**

(0.25 Days) Import Data using T-SQL – Backup and Recovery of Database and Data/Files



## (xi) T-SQL 3 - XML-Integration



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020965                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                              |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 27-28 Aug<br>22-23 Oct<br>24-25 Dec | 03-04 Sep<br>29-30 Oct<br>31 Dec - 01 Jan |

Prices plus local taxes.



### Course Description

Für den Austausch und die Speicherung komplexer Import-/Exportdaten oder strukturierter Inhalte bietet der MS SQL Server eigene Funktionalitäten und Unterstützung von XML an. Dieses Seminar zeigt Ihnen, wie XML in der Datenbank gespeichert, ausgelesen und in der Anwendungsentwicklung genutzt wird. Dies umfasst die Erzeugung von XML aus relationalen Daten über T-SQL-Abfragen sowie die Zerlegung von eingehenden XML-Strömen wieder zurück in relationale Datenbank-Strukturen. Für die XML-Verarbeitung lernen Sie, wie XQuery und XPath sowie XSLT direkt in der Datenbank genutzt werden können.



### Course Outline

#### A. Relationale Daten in XML

(0.5 Days) Einfache Abfragen: Grundlagen, Automatische Umwandlung, Umgang mit leeren Werten - Mehrstufige Dokumente erzeugen: Einsatz von PATH und EXPLICIT - Hierarchisierte Dokumente

#### B. XML speichern, abfragen und verarbeiten

(0.25 Days) Zerlegen von XML - Komplexe Zerlegung mit XPath

#### C. XML abfragen und verarbeiten

(0.5 Days) Überblick XPath und XQuery - Verarbeiten und abfragen mit Datentypmethoden - Einsatz von XPath, XQuery

## **D. Einsatz von XML Schema**

(0.25 Days) Überblick und Syntax von XML Schema - XML Schema-Definitionen erzeugen, anmelden und verwenden  
– XML-Daten validieren – Spalten und Variablen mit XML Schema typisieren

## **E. Einsatz von XSLT**

(0.25 Days) Überblick und Syntax von XSLT - XSLT-Prozessor in .NET erstellen und im MS SQL Server verwenden  
– XSLT in T-SQL einsetzen - Parametrisierte XSLT-Stylesheets

## **F. XML und Integration Services**

(0.25 Days) Einsatz von XML als Eingangsformat für ETL-Prozesse – Verwendung von XML-Tasks in Integration Services-Paketen – ETL und XSLT und XML Schema

## A. MS SQL Server 2014



### (i) Administration and Maintenance



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020820                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 5 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs                                 |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                                     | New York                                  |
|-------------------------------------|---|---|
| 2,850.00 USD                        | 2,650.00 USD                              | 2,850.00 USD                              |
| 24-28 Aug<br>19-23 Oct<br>14-18 Dec | 31 Aug - 04 Sep<br>26-30 Oct<br>21-25 Dec | 27-31 Jul<br>28 Sep - 02 Oct<br>23-27 Nov |

Prices plus local taxes.



#### Course Description

This SQL Server 2012 Database training provides students with the knowledge and skills to maintain a Microsoft SQL Server 2012 database. The course focuses on teaching individuals how to use SQL Server 2012 product features and tools related to maintaining a database. Also this course helps you prepare for the Exam 70-462. The course is intended for individuals who administer and maintain SQL Server databases. These individuals perform database administration and maintenance as their primary area of responsibility, or work in environments where databases play a key role in their primary job. This SQL Server 2012 Database training is also intended for individuals who develop applications that deliver content from SQL Server databases.



#### Course Outline

##### A. Working with Databases

Overview of SQL Server Architecture - Overview of SQL Server Databases - Working with Files and Filegroups - Moving Database Files

##### B. Backup and Recovery

Backup Strategies - Understanding SQL Server Transaction Logging - Planning a SQL Server Backup Strategy - Backing up Databases and Transaction Logs - Managing Database Backups - Working with Backup Options - Understanding the Restore Process - Restoring Databases - Working with Point-in-time recovery - Restoring System Databases and Individual Files

## **C. Importing and Exporting Data**

Transferring Data To/From SQL Server - Importing and Exporting Table Data - Inserting Data in Bulk

## **D. Authenticating and Authorizing Users**

Authenticating Connections to SQL Server - Authorizing Logins to Access Databases - Authorization Across Servers - Working with Server Roles - Working with Fixed Database Roles - Creating User-defined Database Roles - Authorizing User Access to Objects - Authorizing Users to Execute Code - Configuring Permissions at the Schema Level

## **E. Automating SQL Server 2012 Management**

Automating SQL Server Management - Working with SQL Server Agent - Managing SQL Server Agent Jobs - Understanding SQL Server Agent Security - Configuring Credentials C. Configuring Proxy Accounts

## **F. Performing Ongoing Database Maintenance**

Ensuring Database Integrity - Maintaining Indexes - Automating Routine Database Maintenance - Capturing Activity using SQL Server Profiler - Improving Performance with the Database Engine Tuning Advisor - Working with Tracing Options - Monitoring Activity - Capturing and Managing Performance Data - Analyzing Collected Performance Data





## (ii) T-SQL 1 - Queries and Analyses



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020907                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs, database developers            |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                | Miami                  | New York                            |
|------------------------|------------------------|-------------------------------------|
| 1,900.00 USD           | 1,800.00 USD           | 1,900.00 USD                        |
| 14-16 Sep<br>09-11 Nov | 21-23 Sep<br>16-18 Nov | 24-26 Aug<br>19-21 Oct<br>14-16 Dec |

Prices plus local taxes.



### Course Description

This 3-day instructor led course provides students with the technical skills required to write basic Transact-SQL queries for Microsoft SQL Server. This course is intended for SQL Server database administrators, implementers, system engineers, and developers who are responsible for writing queries. After completing this course, students will be able to: a) Describe the uses of and ways to execute the Transact-SQL language, b) Use querying tool, c) Write SELECT queries to retrieve data, d) Group and summarize data by using Transact-SQL, e) Join data from multiple tables, f) Write queries that retrieve and modify data by using subqueries, g) Modify data in tables or h) Use various techniques when working with complex queries.



### Course Outline

#### A. Getting Started with Databases and Transact-SQL in SQL Server

(0.25 Days) Overview of SQL Server - Overview of SQL Server Databases - Overview and Syntax Elements of T-SQL - Working with T-SQL Scripts - Using T-SQL Querying Tools

#### B. Querying and Filtering Data

(0.5 Days) Using the SELECT Statement - Filtering Data - Working with NULL Values - Formatting Result Sets - Performance Considerations for Writing Queries

## **C. Grouping and Summarizing Data**

(0.25 Days) Summarizing Data by Using Aggregate Functions - Summarizing Grouped Data - Ranking Grouped Data - Creating Crosstab Queries

## **D. Joining Data from Multiple Tables**

(0.25 Days) Querying Multiple Tables by Using Joins - Applying Joins for Typical Reporting Needs - Combining and Limiting Result Set

## **E. Working with Subqueries**

(0.25 Days) Writing Basic Subqueries - Writing Correlated Subqueries - Comparing Subqueries with Joins and Temporary Tables - Using Common Table Expressions

## **F. Analysen**

(0.5 Days) Querying Hierarchies - Moving (Centered) Averages - Window Aggregates - Accumulation - (Un) Pivoting of Data

## **G. Modifying Data in Tables**

(0.5 Days) Inserting Data into Tables - Deleting Data from Tables - Updating Data in Tables - Overview of Transactions

## **H. Using Advanced Querying Techniques**

(0.5 Days) Considerations for Querying Data - Working with Data Types - Cursors and Set-Based Queries - Dynamic SQL - Maintaining Query Files - Overview of Views - Overview of User-Defined Functions - Overview of Stored Procedures - Overview of Triggers - Querying Metadata - Querying XML Data



## (iii) T-SQL 2 - Implementing and Programming



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020960                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs, database developers            |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                | Miami                               | New York               |
|------------------------|-------------------------------------|------------------------|
| 1,900.00 USD           | 1,800.00 USD                        | 1,900.00 USD           |
| 14-16 Sep<br>16-18 Nov | 24-26 Aug<br>19-21 Oct<br>14-16 Dec | 05-07 Oct<br>21-23 Dec |

Prices plus local taxes.



### Course Description

This 3-day instructor-led course is intended for Microsoft SQL Server database developers who are responsible for implementing a database on SQL Server. In this course, students learn the skills and best practices on how to use SQL Server product features and tools related to implementing a database server. This course is intended for IT Professionals who want to become skilled on SQL Server 2008 R2 product features and technologies for implementing a database. To be successful in this course, the student should have knowledge of basic relational database concepts and writing T-SQL queries. After completing this course, students will be able to: a) Understand the product, its components, and basic configuration, b) Work with the data types supported by SQL Server, c) Design and implement tables and work with schemas / Design and implement views and partitioned views, f) Describe the concept of an index and determine the appropriate data type for indexes and composite index structures / Identify the appropriate table structures and implement clustered indexes and heaps, g) Describe and capture execution plans, h) Describe transactions, transaction isolation levels, or i) Design and implement scalar and table-valued functions, stored procedures, triggers.



### Course Outline

#### A. Designing and Implementing Databases, Tables/Views and Files

(0.5 Days) Introduction to SQL Server Platform - Working with SQL Server Tools - Configuring SQL Server Services - Data Types: Using Data Types, Converting Data Types - Tables: Designing Tables, Working with Schemas, Creating and Altering Tables - Views: Introduction to Views, Creating and Managing Views, Performance Considerations for Views

## **B. Data Manipulation and Optimization/Tuning**

(0.25 Days) Inserting, Updating, and Deleting Data - Execution Plan Core Concepts - Common Execution Plan Elements - Designing Effective (Non-)Clustered Indexes - Using the Database Engine Tuning Advisor

## **C. T-SQL Programming**

(0.75 Days) Variables - Control Structure - Dynamic SQL - Transactions - Exceptions and T-SQL Error Handling - Cursors

## **D. Implementing Procedures and Functions**

(0.5 Days) User-Defined Functions: Designing and Implementing Scalar Functions, Designing and Implementing Table-valued Functions - Introduction to Stored Procedures - Working With Stored Procedures - Implementing Parameterized Stored Procedures

## **E. Ensuring Data Integrity through Constraints and Triggers**

(0.25 Days) Enforcing Data Integrity - Implementing Domain Integrity - Implementing Entity and Referential Integrity - Implementing DML Triggers

## **F. Security**

(0.25 Days) SQL Server's Security Concepts - Defining and Using Logins, Users and Roles

## **G. Data Import/Export and Backup**

(0.25 Days) Import Data using T-SQL – Backup and Recovery of Database and Data/Files



## (iv) T-SQL 3 - XML-Integration



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020964                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | Bases MS SQL Server                  |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 03-04 Sep<br>29-30 Oct<br>24-25 Dec |

Prices plus local taxes.



### Course Description

Für den Austausch und die Speicherung komplexer Import-/Exportdaten oder strukturierter Inhalte bietet der MS SQL Server eigene Funktionalitäten und Unterstützung von XML an. Dieses Seminar zeigt Ihnen, wie XML in der Datenbank gespeichert, ausgelesen und in der Anwendungsentwicklung genutzt wird. Dies umfasst die Erzeugung von XML aus relationalen Daten über T-SQL-Abfragen sowie die Zerlegung von eingehenden XML-Strömen wieder zurück in relationale Datenbank-Strukturen. Für die XML-Verarbeitung lernen Sie, wie XQuery und XPath sowie XSLT direkt in der Datenbank genutzt werden können.



### Course Outline

#### A. Relationale Daten in XML

(0.5 Days) Einfache Abfragen: Grundlagen, Automatische Umwandlung, Umgang mit leeren Werten - Mehrstufige Dokumente erzeugen: Einsatz von PATH und EXPLICIT - Hierarchisierte Dokumente

#### B. XML speichern, abfragen und verarbeiten

(0.25 Days) Zerlegen von XML - Komplexe Zerlegung mit XPath

#### C. XML abfragen und verarbeiten

(0.5 Days) Überblick XPath und XQuery - Verarbeiten und abfragen mit Datentypmethoden - Einsatz von XPath, XQuery

## **D. Einsatz von XML Schema**

(0.25 Days) Überblick und Syntax von XML Schema - XML Schema-Definitionen erzeugen, anmelden und verwenden  
– XML-Daten validieren – Spalten und Variablen mit XML Schema typisieren

## **E. Einsatz von XSLT**

(0.25 Days) Überblick und Syntax von XSLT - XSLT-Prozessor in .NET erstellen und im MS SQL Server verwenden  
– XSLT in T-SQL einsetzen - Parametrisierte XSLT-Stylesheets

## **F. XML und Integration Services**

(0.25 Days) Einsatz von XML als Eingangsformat für ETL-Prozesse – Verwendung von XML-Tasks in Integration Services-Paketen – ETL und XSLT und XML Schema

## A. Ontologies



### (i) Java and Ontologies



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020962                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, developers              |
| <b>Prerequisites</b> | Java Basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 20-21 Aug<br>15-16 Oct<br>10-11 Dec |

Prices plus local taxes.



#### Course Description

Jena is an open source Semantic Web framework for Java. It provides an API to extract data from and write to RDF graphs. The graphs are represented as an abstract "model". A model can be sourced with data from files, databases, URLs or a combination of these. A Model can also be queried through SPARQL and updated through SPARUL. Furthermore, Jena provides support for OWL (Web Ontology Language). The framework has various internal reasoners and the Pellet reasoner (an open source Java OWL-DL reasoner) can be set up to work in Jena. This training helps Java developers to use Jena in order to create and parse ontologies and semantic data models.



#### Course Outline

##### A. RDF and RDF Graphs

Writing and Reading RDF Documents - RDF Graph Navigation - Querying RDF Graphs - Editing and Parsing RDF Graphs

##### B. OWL and OWL Ontologies

Creating and Parsing OWL Ontologies - Analyzing OWL Classes and Their Properties - Analysis and Creation of Restrictions of OWL Classes

### **C. Triple Store Storage and SDB**

Setting Up and Using Triple Store Storage and Relational Storage Using Jena - Transactions for Read-/Write Operations  
- Bulk Storage

### **D. Querying Ontologies using SPARQL and ARQ**

Simple and complex Queries - Filters and Conditions - Grouping - Sub-Queries - Querying Lists - Dynamic Queries  
- ARQ Filters





## (ii) Ontologies using Protégé



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020173  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers,<br>systems analysts,<br>programmers,<br>developers,<br>consultants |
| <b>Prerequisites</b> | General XML<br>Kentnisse   |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.   |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 13-14 Aug<br>08-09 Oct<br>03-04 Dec |

Prices plus local taxes.



### Course Description

The Protégé platform supports modeling ontologies via a web client or a desktop client. Protégé ontologies can be developed in a variety of formats including OWL, RDF(S), and XML Schema. The Web Ontology Language (OWL) is a family of knowledge representation languages for authoring ontologies. The languages are characterised by formal semantics and RDF/XML-based serializations for the Semantic Web and applications using a complex data model. This training explains both the use of the Protégé software as well as the grammar and structure of OWL.



### Course Outline

#### A. OWL Ontologies using Protégé

(0.75 Days) Classes and Class Hierarchies - Properties and Hierarchies - Relationships- Instanzen - Validation and Inconsistencies – Management of OWL Ontologies in Protégé

#### B. Querying OWL Ontologies

(0.5 Days) Introduction to SPARQL – Queries using OWL2Query – Simple and Complex Queries

## **C. Visualization**

(0.25 Days) Visualizing Hierarchies using OWLViz – Graphical Representation of Relationships Using OntoGraf - Graph Visualization using NavigOWL – Ontologie-Visualization using SOVA

## **D. Reasoning in Protégé**

(0.25 Days) Reasoning and Inference using HermiT - Detecting Differences between Ontologies using LogDiffViz

## **E. Import and Export**

(0.25 Days) UML-Export using OWL2UML – Documentation using OWLDoc



### (iii) RDF / OWL



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020968                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



#### Course Description

The Resource Description Framework (RDF) is a family of World Wide Web Consortium (W3C) specifications originally designed as a metadata data model. It has come to be used as a general method for conceptual description or modeling of information that is implemented in web resources, using a variety of syntax notations and data serialization formats. RDF/XML is a syntax, defined by the W3C, to express and serialize an RDF graph as an XML document. The Web Ontology Language (OWL) is a family of knowledge representation languages for authoring ontologies. The languages are characterised by formal semantics and RDF/XML-based serializations for the Semantic Web. This training presents the main standards RDF, RDF Schema and OWL and shows during hands-on labs how to develop semantic data models.



#### Course Outline

##### A. Ontologie und Metaphysik

(0.25 Days) Herkunft und Ursprung ontologischen Denkens - Metaphysik und Ontologie - Von den großen griechischen Denkern bis zur heutigen Philosophie - Einsatz der Ontologie und semantischer Daten(strukturen) in der Softwaretechnik

##### B. Semantisches Internet

(0.25 Days) Ansätze, Techniken und Anwendungsbeispiele für semantisches Internet - Lokaler Einsatz von Techniken des semantischen Internets in selbst geschriebener Software - Öffnung von Daten zu semantischen Techniken für Austausch und Weiterverarbeitung

## **C. RDF und RDF Schema**

(0.5 Days) Einführung: Einsatzbereiche von Resource Description Framework, Anwendungsbeispiele, Eingliederung in die Dokumentmodellierung und die Modellierung von semantischen Informationen, RDF-Tripel, RDF Data Model und der RDF Graph - Datenstrukturen: Vorgestellter Standard: RDF/XML Syntax Specification und Resource Description Framework (RDF): Concepts and Abstract Syntax, Serialisierung von RDF für XML, Datentypen, Verwendung von RDF/XML in einzelnen Dokumenten oder Blöcken - RDF Schema: Vorgestellter Standard: RDF Semantics - RDF Vocabulary Description Language 1.0: RDF Schema, Elemente, Eigenschaften, Hierarchien, Einschränkungen

## **D. OWL (Ontology Web Language)**

(0.5 Days) Vorgestellter Standard: OWL Web Ontology Language Overview und OWL Web Ontology Language Guide - Ebenen von OWL - Klassen, Eigenschaften, Hierarchien, Datentypen, Beziehungen und erweiterte Ontologie-Definitionen - Einbindung in RDF Schema - Vergleich und Abgrenzung XML Schema

## **E. Verarbeitung und Abfrage von RDF-/OWL-Daten**

(0.5 Days) Auslesen von RDF-Informationen mit Hilfe von XSLT, XPath und XQuery - Abfragesprache SPARQL, SPARQL Query Language for RDF - Alternativen: Einbindung in relationale Datenbanken und Software-APIs

## A. Oracle 11g



### (i) Administration



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020251                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 5 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs                                 |
| <b>Prerequisites</b> | General database knowledge           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                                   | Miami                  | New York                     |
|---|------------------------|------------------------------|
| 2,850.00 USD                              | 2,650.00 USD           | 2,850.00 USD                 |
| 10-14 Aug<br>19-23 Oct<br>28 Dec - 01 Jan | 14-18 Sep<br>23-27 Nov | 21-25 Sep<br>30 Nov - 04 Dec |

Prices plus local taxes.



#### Course Description

This training is intended for database administrators who perform the following tasks a) Create and configure one or more Oracle databases, b) Monitor and tune Oracle databases, c) Oversee routine maintenance operations for Oracle databases, d) Create and maintain schema objects, such as tables, indexes, and views, e) Schedule system and user jobs, and f) Diagnose, repair, and report problems. To benefit most from this training, you should be familiar with relational database concepts. You should also be familiar with the operating system environment under which you are running Oracle Database.



#### Course Outline

##### A. Installation and Set-Up

Installation Requirements - Software Installation with Oracle Universal Installer - Understanding the Oracle Architecture - Database Interfaces and their Use: SQL, PL/SQL, Java, OCCI - Start and Stop the Agent and Listener - Enterprise Manager Database Console - Database Shut Down

##### B. Schema Objects and Data Administration

Create, Change and Examine Tables - Define Constraints - Define Indexes and Views - Using SQL for Data Manipulation

## **C. User Management**

Manage and Remove Database Users and Roles - Rights Management with Roles and Privileges - Resources and Access

## **D. Backup and Recovery**

Fundamentals of Database Backup, Restore and Recovery - Techniques for Instance Recovery - Purpose of Checkpoints, Redo Log Files, Archived Log Files and ARCHIVELOG Mode - Offline and Online Backup of the Database - Incremental Backups - Automate Database Backups - Monitoring the Flash Recovery Area - Recover Lost Control Files, Redo Log Files and Data Files

## **E. Oracle Net Services**

Representation of Oracle Net - Configuring the Listener with Oracle Net Manager - Control the Oracle Net Listener using the Listener Control Utility - Configuring the client and Middle-Tier Connection to Oracle Net Manager - Testing the Connection via Oracle Net with TNSPING

## **F. Storage Models**

Creating and Managing Tablespaces and Data Files - Retrieving Information from Tablespaces - Configuration of Tablespaces with Oracle Managed Files (OMF)



## (ii) Data Mining



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2022768                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,900.00 USD                        | 1,800.00 USD                              | 1,900.00 USD                        |
| 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov |

Prices plus local taxes.



### Course Description

Oracle Data Mining (ODM) provides powerful data mining functionality as native SQL functions within the Oracle Database. Oracle Data Mining enables users to discover new insights hidden in data and to leverage investments in Oracle Database technology. With Oracle Data Mining, you can build and apply predictive models that help you target your best customers, develop detailed customer profiles, and find and prevent fraud. This training provides you with an overview of the Oracle Data Mining architecture and shows you what kind of Data Mining algorithms you can use for your data analysis. You will get to know each algorithm’s principle and statistical-mathematical background before you see the algorithm being applied to DB data.



### Course Outline

#### A. Data Mining and Oracle

(0.5 Days) Statistics, multivariate statistics and Data Mining - Data Mining cycle - Data preprocessing: Descriptive data aggregation, data cleansing, data integration and transformation - Data Reduction - Discretization and concept hierarchies - Data Mining and Business Intelligence: Databases, Data Warehouses and OLAP as the basis for Data Mining - Oracle architecture for Data Mining: database, Data Mining module and MS Excel add-in

#### B. Factors and influences

(0.5 Days) Factor Analysis and Principal Component Analysis - Outlier Analysis

### **C. Data Mining using Association analysis**

(0.25 Days) Finding frequent patterns (Frequent Itemset Mining) - Apriori algorithm - association rules and association analysis - shopping basket analysis

### **D. Data Mining and Classification**

(0.75 Days) Decision Trees: selection of attributes, tree pruning, deduction of rules, quality measures and comparison of models - Support Vector Machines: algorithms, building and using a model

### **E. Data Mining and Probability Theory**

(0.5 Days) Classification using logistic regression - Probability and Bayes' s Theorem - Naïve Bayes: algorithms, building and using a model

### **F. Cluster Analysis**

(0.5 Days) Introduction to Cluster Analysis - Similarity and distance measurement - Variants and basic techniques - Partitioning methods: k-Means Method - Hierarchical methods: agglomerative and divisive methods





### (iii) ODP.NET



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020685                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | . NET basics                         |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



#### Course Dates

| Chicago                | Miami                  | New York               |
|------------------------|------------------------|------------------------|
| 1,750.00 USD           | 1,700.00 USD           | 1,750.00 USD           |
| 10-11 Sep<br>12-13 Nov | 24-25 Sep<br>03-04 Dec | 03-04 Sep<br>05-06 Nov |

Prices plus local taxes.



#### Course Description

Oracle Data Provider for .NET (ODP.NET) features optimized ADO.NET data access to the Oracle database. ODP.NET allows developers to take advantage of advanced Oracle database functionality, including Real Application Clusters, XML DB, and advanced security. The data provider can be used with the latest .NET Framework 4.5 version. ODP.NET makes using Oracle from .NET more flexible, faster, and more stable. ODP.NET includes many features not available from other .NET drivers, including a native XML data type, self-tuning, RAC-optimized connection pooling, promotable transactions, and Advanced Queuing. This training shows you how to integrate ODP.NET in your .NET applications so that you can benefit from its features.



#### Course Outline

**A. Overview of Oracle Data Provider for .NET (ODP.NET)**

**B. Basic Usage Scenarios with ODP.NET**

**C. ODP.NET Assembly**

## **D. Installation and Configuration**

## **E. Database Connections**

## **F. Datatypes**

## **G. Forms and OracleDataReader**

## **H. OracleCommand Object**

## **I. Oracle DataAdapter**

## **J. XML Support of ODP.NET**

## **K. ODP.NET Types**



## (iv) OLAP



### Overview

|                      |   |
|----------------------|---|
| <b>Course ID</b>     | 2023677                                       |
| <b>Language</b>      | en  |
| <b>Duration</b>      | 2 Days  |
| <b>Delivery mode</b> | Classroom                                     |
| <b>Course Type</b>   |   |
| <b>Target Group</b>  | Business Intelligence Developer               |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                          |
| <b>Method</b>        | Presentation with examples and hands-on labs. |
| <b>Course level</b>  | Beginning                                     |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 03-04 Sep<br>29-30 Oct<br>24-25 Dec |

Prices plus local taxes.



### Course Description

Oracle OLAP is a multidimensional analytic engine embedded in Oracle Database 11g. Oracle OLAP cubes deliver calculations using simple SQL queries. This query performance may be leveraged transparently when deploying OLAP cubes as materialized views – enhancing the performance of summary queries against detail relational tables. Because Oracle OLAP is embedded in Oracle Database 11g, it allows centralized management of data and business rules in a secure, scalable and enterprise-ready platform. Oracle OLAP makes it easy to produce analytic measures, including time-series calculations, financial models, forecasts, allocations, regressions, and more. Hundreds of analytic functions can be easily combined in custom functions to solve nearly any analytic calculation requirement. Oracle OLAP cubes are represented using a star schema design: dimension views form a constellation around the cube (or fact) view. This standard representation of OLAP data makes it easy for any reporting and analysis tool or application - including sophisticated business intelligence solutions, SQL-based development tools and Microsoft Excel - to leverage the power of Oracle OLAP in a simple and productive way. This training shows you how to develop Data Warehousing solutions based on Oracle.



### Course Outline

#### A. Multidimensional Data Structures and OLAP

(0.25 Days) Oracle OLAP and Oracle BI / DW Platform - Architecture of a Data Warehouse and an OLAP Solution - Elements of an OLAP Solution

## **B. OLAP Cubes and the Analytic Workspace Manager 11g (AWM 11g)**

(0.5 Days) Defining Measures and Calculations using the Calculation Builder - Loading the Data and Mapping Data to Multidimensional Structures with Dimensions and Hierarchies

## **C. SQL-Queries for Oracle OLAP Cubes**

(0.5 Days) Cube Views - Calculations and Aggregations - Filters - Joining Relational and OLAP Data

## **D. Cube-Organized Materialized Views (Cube MVs)**

(0.25 Days) Cube MV Summary Management - Defining and Using Cube MVs

## **E. OLAP Cube-Administration**

(0.5 Days) Implementing Security - Performance Optimization - Cube Maintenance and Management

# (v) Oracle BI Discoverer / Analyzing Relational and OLAP Data



## Overview

|                      |   |
|----------------------|---|
| <b>Course ID</b>     | 2023678                                       |
| <b>Language</b>      | en  |
| <b>Duration</b>      | 2 Days  |
| <b>Delivery mode</b> | Classroom                                     |
| <b>Course Type</b>   |   |
| <b>Target Group</b>  | Business Intelligence Developer               |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                          |
| <b>Method</b>        | Presentation with examples and hands-on labs. |
| <b>Course level</b>  | Advanced                                      |



## Course Dates

| Chicago                             | Miami                               | New York               |
|-------------------------------------|-------------------------------------|------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD           |
| 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 03-04 Sep<br>29-30 Oct<br>24-25 Dec | 17-18 Sep<br>12-13 Nov |

Prices plus local taxes.



## Course Description

Oracle Business Intelligence Discoverer is an intuitive ad-hoc query, reporting, analysis and Web publishing tool set that gives business users immediate access to information in databases. Oracle BI Discoverer enables business users at all levels of the organization to make faster and more informed business decisions. Using any standard Web browser, you have secure and immediate access to data from both relational and multidimensional data sources. The Oracle BI Spreadsheet Add-In enables end users to display and navigate Oracle OLAP data from within Excel. Users can treat the Oracle OLAP data as regular Excel data. Using a wizard-driven interface, users can select data from Oracle OLAP simply by choosing from a list of values or by creating advanced selections, such as those based on exceptions, top/bottom analysis, or hierarchies.



## Course Outline

### A. Simple Reports

(0.75 Days) Workbook and Worksheets - Queries - Tables and Cross-Tabs - Page Elements (Header and Footer, Title, Formatting Columns, Graphics) - Sorting and Grouping of Results - Aggregations

### B. Diagrams

(0.25 Days) Types of Diagrams - Reports and Diagrams

## **C. Complex Techniques**

(0.5 Days) Conditions and Conditional Formatting - OLAP Operations: Pivoting, Drilling, and Slicing/Dicing - Static and Dynamic Parameters - Calculations - Advanced Analysis

## **D. Administration of Reports**

(0.5 Days) Scheduling Manager - Running Reports in Batch Mode - Managing Workbooks, Publishing and Exporting Reports



## (vi) PHP



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020309                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 1 Day                                |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | PHP Basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,250.00 USD                        | 1,200.00 USD                        | 1,250.00 USD                        |
| 04-04 Sep<br>30-30 Oct<br>25-25 Dec | 31-31 Jul<br>25-25 Sep<br>20-20 Nov | 21-21 Aug<br>16-16 Oct<br>11-11 Dec |

Prices plus local taxes.



### Course Description

This PHP Oracle training is for PHP programmers developing applications for Oracle Database. It bridges the gap between the world of PHP and the universe of Oracle and shows how to use the PHP scripting language with Oracle Database. This training gives you the fundamental building blocks needed to create high-performance PHP Oracle Web applications.



### Course Outline

#### A. PHP OCI8 Extension

(0.5 Days) Connecting to Oracle Using OCI8 - Connection Types - Connection and Environment Errors - Transactions and Connections - Authorization and Authentication - Executing SQL Statements With OCI8 - Fetch Functions - Insert, Update, Delete, Create and Drop in PHP OCI8 - PHP Error Handling - Using Bind Variables in Prepared Statements - Improving Performance by Prefetching and Caching - Monitoring OCI8 SQL Statements - LIMIT, Auto-Increment, Last Insert ID and Multiple Inserts

#### B. PHP Data Objects

(0.5 Days) Connecting to Oracle Using PDO - Executing SQL Statements - Using Bind Variables in Prepared Statements - Transactions - PL/SQL-Integration in PDO

## **C. PL/SQL and PHP**

(0.5 Days) PL/SQL Overview - Blocks, Procedures, Packages and Triggers - Using PL/SQL With OCI8: Calling PL/SQL Code, Array Binding and PL/SQL Bulk Processing, Using REF CURSORS for Result Sets, Oracle Collections in PHP, Using PL/SQL and Oracle Object Types in PHP, Getting Output With DBMS\_OUTPUT, PL/SQL Backtraces in a PL/SQL Exception Handler

## **D. Using Large Objects in OCI8**

(0.25 Days) Working With LOBs in Oracle and PL/SQL - Inserting and Updating LOBs - Fetching LOBs - Temporary LOBs - Uploading and Displaying an Image - Working With BFILES

## **E. Using XML With Oracle and PHP**

(0.25 Days) Fetching Relational Rows as XML - Fetching Rows as Fully Formed XML - Using the SimpleXML Extension in PHP - Fetching XMLType Columns - Inserting Into XMLType Columns - Fetching an XMLType from a PL/SQL Function - XQuery XML Query Language





## (vii) PL/SQL 1



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020506                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 4 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs, database developers            |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 2,650.00 USD                        | 2,500.00 USD                        | 2,650.00 USD                        |
| 17-20 Aug<br>12-15 Oct<br>07-10 Dec | 24-27 Aug<br>19-22 Oct<br>14-17 Dec | 07-10 Sep<br>02-05 Nov<br>28-31 Dec |

Prices plus local taxes.



### Course Description

PL/SQL is an SQL-based procedural programming language that was designed specifically for the seamless processing of SQL commands. It provides specific syntax for this purpose and supports exactly the same datatypes as SQL. Server-side PL/SQL is stored and compiled in Oracle Database and runs within the Oracle executable. It automatically inherits the robustness, security, and portability of Oracle Database. PL/SQL is tightly integrated with SQL. With PL/SQL, you can use all SQL data manipulation, cursor control, and transaction control statements, and all SQL functions, operators, and pseudocolumns. Oracle provides product-specific packages that define APIs you can invoke from PL/SQL to perform many useful tasks. You can create standalone subprograms (procedures and functions) at schema level. They are compiled and stored in the database, where they can be used by any number of applications connected to the database. This training introduces you to the basic syntax of PL/SQL and shows you then how to develop scripts, procedures, functions or triggers.



### Course Outline

#### A. PL/SQL Syntax

(1 Day) Basics of PL/SQL: programming concept of Oracle applications, PL/SQL blocks, variables, data types - control structures: conditional statements, loops - transaction management - data record types and records - working with files

#### B. Cursor for SQL Queries in PL/SQL

(0.5 Days) Declaration of Cursors in PL/SQL - cursor handling - data processing with cursors - attributes and parameters - cursor variables - cursor expressions in SQL

## **C. Exceptions and Error Handling**

(0.25 Days) Key topics of error handling - exception block - triggering and handling exceptions - exception types and complex exception handling in nested PL/SQL routines

## **D. Collections**

(0.5 Days) PL/SQL collections and collection types - bulk load and bulk inserts - combination of collections and SQL - collection methods – collections and records

## **E. Native Dynamic SQL**

(0.5 Days) Dynamic SQL and its execution at run-time in PL/SQL - parameters - bulk inserts and bulk binding / mass data processing - using native dynamic SQL with cursors, collections and record types

## **F. PL/SQL Modules in Oracle**

(0.75 Days) PL/SQL procedures - functions - parameters - local modules - overloading - use PL/SQL packages - triggers (DML, Instead-of-trigger, system triggers)

## **G. Overview of PL/SQL Extensions**

(0.25 Days) Object-relational data structures and their usage in PL/SQL - XML integration with Oracle and XML processing in PL/SQL



## (viii) PL/SQL 2 - Object-Relational Features



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020497                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, developers              |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



### Course Description

Oracle’s Object-Relational Features are intended for programmers developing new applications or converting existing applications to run in the Oracle environment. The object-relational features are often used in content management, data warehousing, data/information integration, and similar applications that deal with complex structured data. The object views feature can be valuable when writing new C++, Java, or XML applications on top of an existing relational schema. This training assumes that you have a working knowledge of application programming and that you are familiar with the use of Structured Query Language (SQL) to access information in relational database systems. The various parts of this training a) introduce the key features and explain the advantages of the object-relational model, b) explain the basic concepts and terminology that you need to work with Oracle Objects, c) discuss collection datatypes and operations on collection datatypes, d) explain object views, which allow you to develop object-oriented applications without changing the underlying relational schema, and e) explains how to perform essential operations with objects and object types.



### Course Outline

#### A. General Concepts of PL/SQL and Oracle Objects

(0.25 Days) Overview of Object Orientation - Relational Mapping with PL/SQL - Object-Relational Structures

#### B. Object Types in PL/SQL and SQL

(0.25 Days) Introduction: basic principles of object types and objects, defining object types - PL/SQL objects in the Oracle database: create an object type, objects and SQL statements, objects in PL/SQL, object methods

## **C. Inheritance in PL/SQL**

(0.5 Days) Inheritance and hierarchies in PL/SQL object types: Simple inheritance, overriding methods, substitution principle and dynamic binding, overloading, inheritance prevention - Abstraction: The principle of abstraction, substitution principle for abstraction, tables and inheritance, substitution principle for tables substitutability important SQL functions

## **D. PL/SQL Objects and PL/SQL Collections**

(0.5 Days) Create collections using object types: use of VARRAYs, use of nested tables - Use of collections in tables: collection types, collections of primitive data type, DML operations - collections and objects in PL/SQL: use of collections and cursors, nested tables, collections, nested structures

## **E. Management of Objects**

(0.25 Days) Permissions and security: system privileges for PL/SQL object types, schema rights for PL/SQL object types - administration of objects: dependencies, synonyms, system views for objects

## **F. Object Views and OR-Mapping**

(0.25 Days) Object Views and their use: general approach, nested structures - hierarchies and relationships, single-level hierarchies with collections, multilevel hierarchy with and without collections, relationships - working with Object Views: primary keys in views, NULL values??, references, inheritance, manipulation of data in views using SQL statements



## (ix) PL/SQL 3 - XML Integration



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020293                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, developers              |
| <b>Prerequisites</b> | General database knowledge           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 2,050.00 USD                        | 1,950.00 USD                        | 2,050.00 USD                        |
| 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec |

Prices plus local taxes.



### Course Description

Oracle XML DB is the name for a set of Oracle Database technologies related to high-performance XML storage and retrieval. It provides native XML support by encompassing both SQL and XML data models in an interoperable manner. Oracle XML DB includes the following features: a) Support for the World Wide Web Consortium (W3C) XML and XML Schema data models and standard access methods for navigating and querying XML. The data models are incorporated into Oracle Database. b) Ways to store, query, update, and transform XML data while accessing it using SQL. c) Ways to perform XML operations on SQL data. d) A simple, lightweight XML repository where you can organize and manage database content, including XML, using a file/folder/URL metaphor. This training provides an overview incl. presentations and hands-on labs of how to use Oracle XML DB.



### Course Outline

#### A. Relational Query Results in XML

(0.5 Days) ISO Standard SQL/XML and its functions: Simple queries, XML document features, complex queries, SQL/XML query processing - queries with DBMS\_XMLGEN: Package structure, query processing, complex queries - Oracle-specific SQL functions: generation of simple elements, use of object and table types, creation of aggregates, XML document specification

## **B. XML Processing using PL/SQL and DOM**

(0.5 Days) Overview of DOM and the PL/SQL package DBMS\_XMLDOM - produce, process and manipulate XML documents - use of XPath

## **C. XML Processing using PL/SQL and XSLT**

(0.5 Days) Processing XML with XSLT, use parameters - overview of XSLT and the PL/SQL package DBMS\_XSLPROCESSOR

## **D. Storing XML in Oracle**

(0.25 Days) Usage scenarios: Realization of Import and Export - Storage models: use of the file system, relational storage, object-relational storage, use of XMLType, De-/Serialization of objects

## **E. XML Schema - based XML**

(0.5 Days) DBMS\_XMLSCHEMA: register XML schema, generate storage structures and XML Schema, XML Schema evolution, catalog views - Schema-based storage: XML Schema and XML storage, advanced storage options

## **F. XML datatype XMLType**

(0.75 Days) Using the PL/SQL package DBMS\_XMLSTORE - XML Schema, XSLT, PL/SQL Transformation of XMLType, validation of XMLType - XMLType views: Generation of views with and without XML Schema



## (x) SQL



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020123                                |
| <b>Language</b>      | en                                     |
| <b>Duration</b>      | 3 Days                                 |
| <b>Delivery mode</b> | Classroom                              |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers, developers, DB developers |
| <b>Prerequisites</b> | General database knowledge             |
| <b>Method</b>        | Lecture with examples and exercises.   |
| <b>Course level</b>  | Beginning                              |



### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 2,050.00 USD                        | 1,950.00 USD                        | 2,050.00 USD                              |
| 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec |

Prices plus local taxes.



### Course Description

Structured Query Language (SQL) is the set of statements with which all programs and users access data in an Oracle database. Application programs and Oracle tools often allow users access to the database without using SQL directly, but these applications in turn must use SQL when executing the user's request. The strengths of SQL provide benefits for all types of users, including application programmers, database administrators, managers, and end users. The purpose of SQL is to provide an interface to a relational database such as Oracle Database, and all SQL statements are instructions to the database. This training covers all key concepts of using SQL like a) querying data, b) inserting, updating, and deleting rows in a table, c) creating, replacing, altering, and dropping objects, d) controlling access to the database and its objects, and e) guaranteeing database consistency and integrity.



### Course Outline

#### A. SQL and Relational Databases

(0.25 Days) The Relational Database System: Key Concepts, Requirements for a DBMS, Architecture Patterns, System Components - The Relational Model: Basic Concepts, Semantic Model, Characteristics of Data and Data Types, Relationships, Entity-Relationship Model (ERM), Normalization

## **B. SQL DML: Simple Queries**

(0.5 Days) Fundamental Structures of Queries - Filters and Operators - Sorting: Single and Multiple Sorting - Grouping: Standard Aggregate Functions, Grouping, Groups with Multiple Columns, Groups with Different Aggregate Functions

## **C. SQL DML: Advanced Queries**

(0.5 Days) Queries with Multiple Tables: Principle of Queries using Multiple Tables, Manual and ANSI SQL Joins - Subqueries: Replacement of Values, Subqueries in the Column List, Correlated Subqueries, Derived Tables, Predicates with Subqueries - Advanced Techniques in SQL: Case Distinctions, Access to Pseudo Columns - Hierarchical Queries

## **D. SQL Functions**

(0.25 Days) Strings - Mathematics - Date and Time - Aggregates

## **E. SQL DML: Queries and Analyses**

(0.5 Days) Advanced Grouping: Purpose of Extensions to GROUP BY, GROUPING SETS, ROLLUP, CUBE, GROUPING Functions - Creating Rankings: Rankings, Charts, Ranking with Distributions, Quantiles, Histograms, Individual Row Numbers for Records - Statistical Analysis in SQL: Window Functions, Centered Moving Average, Cumulation, First and Last Values ??of a Subset, Linear Regression - Advanced Query Techniques: Common Table Expressions (CTE), Pivoting and Unpivotierung - Simple Reports with SQL\*Plus: Simple Reports, Grouping and Aggregates, Output Options and Report Formats

## **F. SQL DDL: Schema Objects**

(0.5 Days) Creating and Managing Tables - Constraints and Keys - Views - Other Database Objects: Sequences, Indexes, Synonyms

## **G. SQL DML: Data Manipulation**

(0.5 Days) Inserting Data: The Standard Case, Inserting Data from Query, Inserting into Multiple Tables - Updating Data: The Standard Case, Updating Based on Other Table Data using Subqueries - Deleting Data: The Standard Case, The Use of Subqueries - Transactions in DML Operations: Basics, Instructions for Transaction Control, Savepoints





## (xi) Statistics using SQL



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2022764                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                                   | Miami                               | New York                            |
|---|-------------------------------------|-------------------------------------|
| 2,050.00 USD                              | 1,950.00 USD                        | 2,050.00 USD                        |
| 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 07-09 Sep<br>02-04 Nov<br>28-30 Dec |

Prices plus local taxes.



### Course Description

Oracle developers, and marketing/controlling professionals who have direct access to the Oracle database using SQL or PL/SQL can perform statistical analysis for descriptive statistics and inferential statistics using SQL queries and PL/SQL procedures and PL/SQL functions. This course presents you the numerous functions that are available directly in the Oracle database by making heavy use of scripting examples. The statistical concepts of central tendency, dispersion, correlation and regression, and statistical testing for distribution tests, contingency analysis and the analysis of variance (ANOVA) are also a part of this training.



### Course Outline

#### A. Data analysis using Descriptive Statistics

(0.5 Days) Central tendency: Frequencies using COUNT, mode using STATS\_MODE, mean values ??using AVG, MEDIAN - quantiles using PERCENTILE\_CONT and PERCENTILE\_DISC - Measures of dispersion: range using MIN and MAX, standard deviation using STDDEV, STDDEV\_POP and STDDEV\_SAMP, variance using VAR\_POP, VAR\_SAMP and VARIANCE - Rank and distribution using CUME\_DIST, DENSE\_RANK, RANK, and PERCENT\_RANK

#### B. Correlation analysis

(0.25 Days) Covariance using COVAR\_POP and COVAR\_SAMP - correlation using CORR (Bravais-Pearson) - rank correlation using CORR\_S (Spearman's rho) and CORR\_K (Kendall's tau)

## C. Regression analysis

(0.25 Days) Linear regression and the least squares method - linear equation derived using REGR\_SLOPE and REGR\_INTERCEPT - coefficient of determination using REGR\_R2 - averages using REGR\_AVGX and REGR\_AVGY - model check using REGR\_COUNT, REGR\_SXX, REGR\_SYY and REGR\_SXY - prediction and residual analysis

## D. Contingency

(0.25 Days) contingency and categorical variables - Chi-Square test using CHISQ\_OBS and CHISQ\_DF - significance using CHISQ\_SIG - Contingency: Phi Coefficient using PHI\_COEFFICIENT, Cramer's V using CRAMERS\_V, Contingency Coefficient using CONT\_COEFFICIENT and Cohen's Kappa using COHENS\_K

## E. Statistical Tests

(0.75 Days) Overview of probability theory - introduction to test theory - t-test using STATS\_T\_TEST\_ONE (one sample), STATS\_T\_TEST\_PAISED (two samples), STATS\_T\_TEST\_INDEP (two independent samples) and STATS\_T\_TEST\_INDEPU (two independent samples with unequal variance) - variance comparison using STATS\_F\_TEST - distribution tests using STATS\_BINOMIAL\_TEST - Mann-Whitney test using STATS\_MW\_TEST - Kolmogorov-Smirnov function using STATS\_KS\_TEST - Wilcoxon signed ranks using STATS\_WSR\_TEST

## F. Analysis of Variance (ANOVA)

(0.5 Days) Analysis of Variance - ANOVA performed using STATS\_ONE\_WAY\_ANOVA: Sum of Squares using SUM\_SQUARES\_BETEEN and SUM\_SQUARES\_WITHIN, mean squares using MEAN\_SQUARES\_BETWEEN and MEAN\_SQUARES\_WITHIN, F-value using F\_RATIO and significance using SIG

## G. Time series analysis and trend

(0.5 Days) Fundamentals of time series analysis: Components, stationarity, autocorrelation, autocovariance, periodicity - Smoothing: moving average, exponential smoothing - Trend calculations using linear regression - seasonal decomposition and residual analysis

## A. Oracle 12c



### (i) Administration



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020250                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 5 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs                                 |
| <b>Prerequisites</b> | General database knowledge           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                                   | Miami                  | New York                     |
|---|------------------------|------------------------------|
| 2,850.00 USD                              | 2,650.00 USD           | 2,850.00 USD                 |
| 10-14 Aug<br>19-23 Oct<br>28 Dec - 01 Jan | 14-18 Sep<br>23-27 Nov | 21-25 Sep<br>30 Nov - 04 Dec |

Prices plus local taxes.



#### Course Description

This training is intended for database administrators who perform the following tasks a) Create and configure one or more Oracle databases, b) Monitor and tune Oracle databases, c) Oversee routine maintenance operations for Oracle databases, d) Create and maintain schema objects, such as tables, indexes, and views, e) Schedule system and user jobs, and f) Diagnose, repair, and report problems. To benefit most from this training, you should be familiar with relational database concepts. You should also be familiar with the operating system environment under which you are running Oracle Database.



#### Course Outline

##### A. Installation and Set-Up

Installation Requirements - Software Installation with Oracle Universal Installer - Understanding the Oracle Architecture - Database Interfaces and their Use: SQL, PL/SQL, Java, OCCI - Start and Stop the Agent and Listener - Enterprise Manager Database Console - Database Shut Down

##### B. Schema Objects and Data Administration

Create, Change and Examine Tables - Define Constraints - Define Indexes and Views - Using SQL for Data Manipulation

## **C. User Management**

Manage and Remove Database Users and Roles - Rights Management with Roles and Privileges - Resources and Access

## **D. Backup and Recovery**

Fundamentals of Database Backup, Restore and Recovery - Techniques for Instance Recovery - Purpose of Checkpoints, Redo Log Files, Archived Log Files and ARCHIVELOG Mode - Offline and Online Backup of the Database - Incremental Backups - Automate Database Backups - Monitoring the Flash Recovery Area - Recover Lost Control Files, Redo Log Files and Data Files

## **E. Oracle Net Services**

Representation of Oracle Net - Configuring the Listener with Oracle Net Manager - Control the Oracle Net Listener using the Listener Control Utility - Configuring the client and Middle-Tier Connection to Oracle Net Manager - Testing the Connection via Oracle Net with TNSPING

## **F. Storage Models**

Creating and Managing Tablespaces and Data Files - Retrieving Information from Tablespaces - Configuration of Tablespaces with Oracle Managed Files (OMF)



## (ii) Data Mining



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2023687                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                                   | Miami                               | New York               |
|---|-------------------------------------|------------------------|
| 2,050.00 USD                              | 1,950.00 USD                        | 2,050.00 USD           |
| 31 Aug - 02 Sep<br>26-28 Oct<br>21-23 Dec | 24-26 Aug<br>19-21 Oct<br>14-16 Dec | 14-16 Sep<br>09-11 Nov |

Prices plus local taxes.



### Course Description

Oracle Data Mining (ODM) provides powerful data mining functionality as native SQL functions within the Oracle Database. Oracle Data Mining enables users to discover new insights hidden in data and to leverage investments in Oracle Database technology. With Oracle Data Mining, you can build and apply predictive models that help you target your best customers, develop detailed customer profiles, and find and prevent fraud. This training provides you with an overview of the Oracle Data Mining architecture and shows you what kind of Data Mining algorithms you can use for your data analysis. You will get to know each algorithm’s principle and statistical-mathematical background before you see the algorithm being applied to DB data.



### Course Outline

#### A. Data Mining and Oracle

(0.5 Days) Statistics, multivariate statistics and Data Mining - Data Mining cycle - Data preprocessing: Descriptive data aggregation, data cleansing, data integration and transformation - Data Reduction - Discretization and concept hierarchies - Data Mining and Business Intelligence: Databases, Data Warehouses and OLAP as the basis for Data Mining - Oracle architecture for Data Mining: database, Data Mining module and MS Excel add-in

#### B. Factors and influences

(0.5 Days) Factor Analysis and Principal Component Analysis - Outlier Analysis

### **C. Data Mining using Association analysis**

(0.25 Days) Finding frequent patterns (Frequent Itemset Mining) - Apriori algorithm - association rules and association analysis - shopping basket analysis

### **D. Data Mining and Classification**

(0.75 Days) Decision Trees: selection of attributes, tree pruning, deduction of rules, quality measures and comparison of models - Support Vector Machines: algorithms, building and using a model

### **E. Data Mining and Probability Theory**

(0.5 Days) Classification using logistic regression - Probability and Bayes' s Theorem - Naïve Bayes: algorithms, building and using a model

### **F. Cluster Analysis**

(0.5 Days) Introduction to Cluster Analysis - Similarity and distance measurement - Variants and basic techniques - Partitioning methods: k-Means Method - Hierarchical methods: agglomerative and divisive methods



### (iii) ODP.NET



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020686                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | . NET basics                         |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



#### Course Dates

| Chicago                | Miami                  | New York                            |
|------------------------|------------------------|-------------------------------------|
| 1,750.00 USD           | 1,700.00 USD           | 1,750.00 USD                        |
| 10-11 Sep<br>12-13 Nov | 24-25 Sep<br>03-04 Dec | 30-31 Jul<br>01-02 Oct<br>17-18 Dec |

Prices plus local taxes.



#### Course Description

Oracle Data Provider for .NET (ODP.NET) features optimized ADO.NET data access to the Oracle database. ODP.NET allows developers to take advantage of advanced Oracle database functionality, including Real Application Clusters, XML DB, and advanced security. The data provider can be used with the latest .NET Framework 4.5 version. ODP.NET makes using Oracle from .NET more flexible, faster, and more stable. ODP.NET includes many features not available from other .NET drivers, including a native XML data type, self-tuning, RAC-optimized connection pooling, promotable transactions, and Advanced Queuing. This training shows you how to integrate ODP.NET in your .NET applications so that you can benefit from its features.



#### Course Outline

**A. Overview of Oracle Data Provider for .NET (ODP.NET)**

**B. Basic Usage Scenarios with ODP.NET**

**C. ODP.NET Assembly**

## **D. Installation and Configuration**

## **E. Database Connections**

## **F. Datatypes**

## **G. Forms and OracleDataReader**

## **H. OracleCommand Object**

## **I. Oracle DataAdapter**

## **J. XML Support of ODP.NET**

## **K. ODP.NET Types**



## (iv) Oracle BI Discoverer / Analyzing Relational and OLAP Data



### Overview

|                      |   |
|----------------------|---|
| <b>Course ID</b>     | 2020494                                       |
| <b>Language</b>      | en  |
| <b>Duration</b>      | 2 Days  |
| <b>Delivery mode</b> | Classroom                                     |
| <b>Course Type</b>   |   |
| <b>Target Group</b>  | Business Intelligence Developer               |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                          |
| <b>Method</b>        | Presentation with examples and hands-on labs. |
| <b>Course level</b>  | Advanced                                      |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 20-21 Aug<br>15-16 Oct<br>10-11 Dec |

Prices plus local taxes.



### Course Description

Oracle Business Intelligence Discoverer is an intuitive ad-hoc query, reporting, analysis and Web publishing tool set that gives business users immediate access to information in databases. Oracle BI Discoverer enables business users at all levels of the organization to make faster and more informed business decisions. Using any standard Web browser, you have secure and immediate access to data from both relational and multidimensional data sources. The Oracle BI Spreadsheet Add-In enables end users to display and navigate Oracle OLAP data from within Excel. Users can treat the Oracle OLAP data as regular Excel data. Using a wizard-driven interface, users can select data from Oracle OLAP simply by choosing from a list of values or by creating advanced selections, such as those based on exceptions, top/bottom analysis, or hierarchies.



### Course Outline

#### A. Simple Reports

(0.75 Days) Workbook and Worksheets - Queries - Tables and Cross-Tabs - Page Elements (Header and Footer, Title, Formatting Columns, Graphics) - Sorting and Grouping of Results - Aggregations

#### B. Diagrams

(0.25 Days) Types of Diagrams - Reports and Diagrams

## **C. Complex Techniques**

(0.5 Days) Conditions and Conditional Formatting - OLAP Operations: Pivoting, Drilling, and Slicing/Dicing - Static and Dynamic Parameters - Calculations - Advanced Analysis

## **D. Administration of Reports**

(0.5 Days) Scheduling Manager - Running Reports in Batch Mode - Managing Workbooks, Publishing and Exporting Reports



## (v) PHP



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020311                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 1 Day                                |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | PHP Basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,250.00 USD                        | 1,200.00 USD                        | 1,250.00 USD                        |
| 04-04 Sep<br>30-30 Oct<br>25-25 Dec | 21-21 Aug<br>16-16 Oct<br>11-11 Dec | 31-31 Jul<br>25-25 Sep<br>20-20 Nov |

Prices plus local taxes.



### Course Description

This PHP Oracle training is for PHP programmers developing applications for Oracle Database. It bridges the gap between the world of PHP and the universe of Oracle and shows how to use the PHP scripting language with Oracle Database. This training gives you the fundamental building blocks needed to create high-performance PHP Oracle Web applications.



### Course Outline

#### A. PHP OCI8 Extension

(0.5 Days) Connecting to Oracle Using OCI8 - Connection Types - Connection and Environment Errors - Transactions and Connections - Authorization and Authentication - Executing SQL Statements With OCI8 - Fetch Functions - Insert, Update, Delete, Create and Drop in PHP OCI8 - PHP Error Handling - Using Bind Variables in Prepared Statements - Improving Performance by Prefetching and Caching - Monitoring OCI8 SQL Statements - LIMIT, Auto-Increment, Last Insert ID and Multiple Inserts

#### B. PHP Data Objects

(0.5 Days) Connecting to Oracle Using PDO - Executing SQL Statements - Using Bind Variables in Prepared Statements - Transactions - PL/SQL-Integration in PDO

## **C. PL/SQL and PHP**

(0.5 Days) PL/SQL Overview - Blocks, Procedures, Packages and Triggers - Using PL/SQL With OCI8: Calling PL/SQL Code, Array Binding and PL/SQL Bulk Processing, Using REF CURSORS for Result Sets, Oracle Collections in PHP, Using PL/SQL and Oracle Object Types in PHP, Getting Output With DBMS\_OUTPUT, PL/SQL Backtraces in a PL/SQL Exception Handler

## **D. Using Large Objects in OCI8**

(0.25 Days) Working With LOBs in Oracle and PL/SQL - Inserting and Updating LOBs - Fetching LOBs - Temporary LOBs - Uploading and Displaying an Image - Working With BFILES

## **E. Using XML With Oracle and PHP**

(0.25 Days) Fetching Relational Rows as XML - Fetching Rows as Fully Formed XML - Using the SimpleXML Extension in PHP - Fetching XMLType Columns - Inserting Into XMLType Columns - Fetching an XMLType from a PL/SQL Function - XQuery XML Query Language



## (vi) PL/SQL 1



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020505                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 4 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | DBAs, database developers            |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                                   | Miami                               | New York                            |
|---|-------------------------------------|-------------------------------------|
| 2,650.00 USD                              | 2,500.00 USD                        | 2,650.00 USD                        |
| 10-13 Aug<br>05-08 Oct<br>30 Nov - 03 Dec | 24-27 Aug<br>19-22 Oct<br>14-17 Dec | 07-10 Sep<br>02-05 Nov<br>28-31 Dec |

Prices plus local taxes.



### Course Description

PL/SQL is an SQL-based procedural programming language that was designed specifically for the seamless processing of SQL commands. It provides specific syntax for this purpose and supports exactly the same datatypes as SQL. Server-side PL/SQL is stored and compiled in Oracle Database and runs within the Oracle executable. It automatically inherits the robustness, security, and portability of Oracle Database. PL/SQL is tightly integrated with SQL. With PL/SQL, you can use all SQL data manipulation, cursor control, and transaction control statements, and all SQL functions, operators, and pseudocolumns. Oracle provides product-specific packages that define APIs you can invoke from PL/SQL to perform many useful tasks. You can create standalone subprograms (procedures and functions) at schema level. They are compiled and stored in the database, where they can be used by any number of applications connected to the database. This training introduces you to the basic syntax of PL/SQL and shows you then how to develop scripts, procedures, functions or triggers.



### Course Outline

#### A. PL/SQL Syntax

(1 Day) Basics of PL/SQL: programming concept of Oracle applications, PL/SQL blocks, variables, data types - control structures: conditional statements, loops - transaction management - data record types and records - working with files

#### B. Cursor for SQL Queries in PL/SQL

(0.5 Days) Declaration of Cursors in PL/SQL - cursor handling - data processing with cursors - attributes and parameters - cursor variables - cursor expressions in SQL

## **C. Exceptions and Error Handling**

(0.25 Days) Key topics of error handling - exception block - triggering and handling exceptions - exception types and complex exception handling in nested PL/SQL routines

## **D. Collections**

(0.5 Days) PL/SQL collections and collection types - bulk load and bulk inserts - combination of collections and SQL - collection methods – collections and records

## **E. Native Dynamic SQL**

(0.5 Days) Dynamic SQL and its execution at run-time in PL/SQL - parameters - bulk inserts and bulk binding / mass data processing - using native dynamic SQL with cursors, collections and record types

## **F. PL/SQL Modules in Oracle**

(0.75 Days) PL/SQL procedures - functions - parameters - local modules - overloading - use PL/SQL packages - triggers (DML, Instead-of-trigger, system triggers)

## **G. Overview of PL/SQL Extensions**

(0.25 Days) Object-relational data structures and their usage in PL/SQL - XML integration with Oracle and XML processing in PL/SQL



## (vii) PL/SQL 2 - Object-Relational Features



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020498                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, developers              |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



### Course Description

Oracle’s Object-Relational Features are intended for programmers developing new applications or converting existing applications to run in the Oracle environment. The object-relational features are often used in content management, data warehousing, data/information integration, and similar applications that deal with complex structured data. The object views feature can be valuable when writing new C++, Java, or XML applications on top of an existing relational schema. This training assumes that you have a working knowledge of application programming and that you are familiar with the use of Structured Query Language (SQL) to access information in relational database systems. The various parts of this training a) introduce the key features and explain the advantages of the object-relational model, b) explain the basic concepts and terminology that you need to work with Oracle Objects, c) discuss collection datatypes and operations on collection datatypes, d) explain object views, which allow you to develop object-oriented applications without changing the underlying relational schema, and e) explains how to perform essential operations with objects and object types.



### Course Outline

#### A. General Concepts of PL/SQL and Oracle Objects

(0.25 Days) Overview of Object Orientation - Relational Mapping with PL/SQL - Object-Relational Structures

#### B. Object Types in PL/SQL and SQL

(0.25 Days) Introduction: basic principles of object types and objects, defining object types - PL/SQL objects in the Oracle database: create an object type, objects and SQL statements, objects in PL/SQL, object methods

## **C. Inheritance in PL/SQL**

(0.5 Days) Inheritance and hierarchies in PL/SQL object types: Simple inheritance, overriding methods, substitution principle and dynamic binding, overloading, inheritance prevention - Abstraction: The principle of abstraction, substitution principle for abstraction, tables and inheritance, substitution principle for tables substitutability important SQL functions

## **D. PL/SQL Objects and PL/SQL Collections**

(0.5 Days) Create collections using object types: use of VARRAYs, use of nested tables - Use of collections in tables: collection types, collections of primitive data type, DML operations - collections and objects in PL/SQL: use of collections and cursors, nested tables, collections, nested structures

## **E. Management of Objects**

(0.25 Days) Permissions and security: system privileges for PL/SQL object types, schema rights for PL/SQL object types - administration of objects: dependencies, synonyms, system views for objects

## **F. Object Views and OR-Mapping**

(0.25 Days) Object Views and their use: general approach, nested structures - hierarchies and relationships, single-level hierarchies with collections, multilevel hierarchy with and without collections, relationships - working with Object Views: primary keys in views, NULL values??, references, inheritance, manipulation of data in views using SQL statements





## (viii) PL/SQL 3 - XML Integration



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020292                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, developers              |
| <b>Prerequisites</b> | General database knowledge           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 2,050.00 USD                        | 1,950.00 USD                        | 2,050.00 USD                        |
| 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec |

Prices plus local taxes.



### Course Description

Oracle XML DB is the name for a set of Oracle Database technologies related to high-performance XML storage and retrieval. It provides native XML support by encompassing both SQL and XML data models in an interoperable manner. Oracle XML DB includes the following features: a) Support for the World Wide Web Consortium (W3C) XML and XML Schema data models and standard access methods for navigating and querying XML. The data models are incorporated into Oracle Database. b) Ways to store, query, update, and transform XML data while accessing it using SQL. c) Ways to perform XML operations on SQL data. d) A simple, lightweight XML repository where you can organize and manage database content, including XML, using a file/folder/URL metaphor. This training provides an overview incl. presentations and hands-on labs of how to use Oracle XML DB.



### Course Outline

#### A. Relational Query Results in XML

(0.5 Days) ISO Standard SQL/XML and its functions: Simple queries, XML document features, complex queries, SQL/XML query processing - queries with DBMS\_XMLGEN: Package structure, query processing, complex queries - Oracle-specific SQL functions: generation of simple elements, use of object and table types, creation of aggregates, XML document specification

## **B. XML Processing using PL/SQL and DOM**

(0.5 Days) Overview of DOM and the PL/SQL package DBMS\_XMLDOM - produce, process and manipulate XML documents - use of XPath

## **C. XML Processing using PL/SQL and XSLT**

(0.5 Days) Processing XML with XSLT, use parameters - overview of XSLT and the PL/SQL package DBMS\_XSLPROCESSOR

## **D. Storing XML in Oracle**

(0.25 Days) Usage scenarios: Realization of Import and Export - Storage models: use of the file system, relational storage, object-relational storage, use of XMLType, De-/Serialization of objects

## **E. XML Schema - based XML**

(0.5 Days) DBMS\_XMLSCHEMA: register XML schema, generate storage structures and XML Schema, XML Schema evolution, catalog views - Schema-based storage: XML Schema and XML storage, advanced storage options

## **F. XML datatype XMLType**

(0.75 Days) Using the PL/SQL package DBMS\_XMLSTORE - XML Schema, XSLT, PL/SQL Transformation of XMLType, validation of XMLType - XMLType views: Generation of views with and without XML Schema



## (ix) SQL



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020122                                |
| <b>Language</b>      | en                                     |
| <b>Duration</b>      | 3 Days                                 |
| <b>Delivery mode</b> | Classroom                              |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers, developers, DB developers |
| <b>Prerequisites</b> | General database knowledge             |
| <b>Method</b>        | Lecture with examples and exercises.   |
| <b>Course level</b>  | Beginning                              |



### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 2,050.00 USD                        | 1,950.00 USD                        | 2,050.00 USD                              |
| 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec |

Prices plus local taxes.



### Course Description

Structured Query Language (SQL) is the set of statements with which all programs and users access data in an Oracle database. Application programs and Oracle tools often allow users access to the database without using SQL directly, but these applications in turn must use SQL when executing the user's request. The strengths of SQL provide benefits for all types of users, including application programmers, database administrators, managers, and end users. The purpose of SQL is to provide an interface to a relational database such as Oracle Database, and all SQL statements are instructions to the database. This training covers all key concepts of using SQL like a) querying data, b) inserting, updating, and deleting rows in a table, c) creating, replacing, altering, and dropping objects, d) controlling access to the database and its objects, and e) guaranteeing database consistency and integrity.



### Course Outline

#### A. SQL and Relational Databases

(0.25 Days) The Relational Database System: Key Concepts, Requirements for a DBMS, Architecture Patterns, System Components - The Relational Model: Basic Concepts, Semantic Model, Characteristics of Data and Data Types, Relationships, Entity-Relationship Model (ERM), Normalization

## **B. SQL DML: Simple Queries**

(0.5 Days) Fundamental Structures of Queries - Filters and Operators - Sorting: Single and Multiple Sorting - Grouping: Standard Aggregate Functions, Grouping, Groups with Multiple Columns, Groups with Different Aggregate Functions

## **C. SQL DML: Advanced Queries**

(0.5 Days) Queries with Multiple Tables: Principle of Queries using Multiple Tables, Manual and ANSI SQL Joins - Subqueries: Replacement of Values, Subqueries in the Column List, Correlated Subqueries, Derived Tables, Predicates with Subqueries - Advanced Techniques in SQL: Case Distinctions, Access to Pseudo Columns - Hierarchical Queries

## **D. SQL Functions**

(0.25 Days) Strings - Mathematics - Date and Time - Aggregates

## **E. SQL DML: Queries and Analyses**

(0.5 Days) Advanced Grouping: Purpose of Extensions to GROUP BY, GROUPING SETS, ROLLUP, CUBE, GROUPING Functions - Creating Rankings: Rankings, Charts, Ranking with Distributions, Quantiles, Histograms, Individual Row Numbers for Records - Statistical Analysis in SQL: Window Functions, Centered Moving Average, Cumulation, First and Last Values ??of a Subset, Linear Regression - Advanced Query Techniques: Common Table Expressions (CTE), Pivoting and Unpivotierung - Simple Reports with SQL\*Plus: Simple Reports, Grouping and Aggregates, Output Options and Report Formats

## **F. SQL DDL: Schema Objects**

(0.5 Days) Creating and Managing Tables - Constraints and Keys - Views - Other Database Objects: Sequences, Indexes, Synonyms

## **G. SQL DML: Data Manipulation**

(0.5 Days) Inserting Data: The Standard Case, Inserting Data from Query, Inserting into Multiple Tables - Updating Data: The Standard Case, Updating Based on Other Table Data using Subqueries - Deleting Data: The Standard Case, The Use of Subqueries - Transactions in DML Operations: Basics, Instructions for Transaction Control, Savepoints



## (x) Statistics using SQL



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020531                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Business Intelligence Developer      |
| <b>Prerequisites</b> | Oracle SQL, PL / SQL                 |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 2,050.00 USD                        | 1,950.00 USD                              | 2,050.00 USD                        |
| 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov |

Prices plus local taxes.



### Course Description

Oracle developers, and marketing/controlling professionals who have direct access to the Oracle database using SQL or PL/SQL can perform statistical analysis for descriptive statistics and inferential statistics using SQL queries and PL/SQL procedures and PL/SQL functions. This course presents you the numerous functions that are available directly in the Oracle database by making heavy use of scripting examples. The statistical concepts of central tendency, dispersion, correlation and regression, and statistical testing for distribution tests, contingency analysis and the analysis of variance (ANOVA) are also a part of this training.



### Course Outline

#### A. Data analysis using Descriptive Statistics

(0.5 Days) Central tendency: Frequencies using COUNT, mode using STATS\_MODE, mean values ??using AVG, MEDIAN - quantiles using PERCENTILE\_CONT and PERCENTILE\_DISC - Measures of dispersion: range using MIN and MAX, standard deviation using STDDEV, STDDEV\_POP and STDDEV\_SAMP, variance using VAR\_POP, VAR\_SAMP and VARIANCE - Rank and distribution using CUME\_DIST, DENSE\_RANK, RANK, and PERCENT\_RANK

#### B. Correlation analysis

(0.25 Days) Covariance using COVAR\_POP and COVAR\_SAMP - correlation using CORR (Bravais-Pearson) - rank correlation using CORR\_S (Spearman's rho) and CORR\_K (Kendall's tau)

## C. Regression analysis

(0.25 Days) Linear regression and the least squares method - linear equation derived using REGR\_SLOPE and REGR\_INTERCEPT - coefficient of determination using REGR\_R2 - averages using REGR\_AVGX and REGR\_AVGY - model check using REGR\_COUNT, REGR\_SXX, REGR\_SYY and REGR\_SXY - prediction and residual analysis

## D. Contingency

(0.25 Days) contingency and categorical variables - Chi-Square test using CHISQ\_OBS and CHISQ\_DF - significance using CHISQ\_SIG - Contingency: Phi Coefficient using PHI\_COEFFICIENT, Cramer's V using CRAMERS\_V, Contingency Coefficient using CONT\_COEFFICIENT and Cohen's Kappa using COHENS\_K

## E. Statistical Tests

(0.75 Days) Overview of probability theory - introduction to test theory - t-test using STATS\_T\_TEST\_ONE (one sample), STATS\_T\_TEST\_PAISED (two samples), STATS\_T\_TEST\_INDEP (two independent samples) and STATS\_T\_TEST\_INDEPU (two independent samples with unequal variance) - variance comparison using STATS\_F\_TEST - distribution tests using STATS\_BINOMIAL\_TEST - Mann-Whitney test using STATS\_MW\_TEST - Kolmogorov-Smirnov function using STATS\_KS\_TEST - Wilcoxon signed ranks using STATS\_WSR\_TEST

## F. Analysis of Variance (ANOVA)

(0.5 Days) Analysis of Variance - ANOVA performed using STATS\_ONE\_WAY\_ANOVA: Sum of Squares using SUM\_SQUARES\_BETEEN and SUM\_SQUARES\_WITHIN, mean squares using MEAN\_SQUARES\_BETWEEN and MEAN\_SQUARES\_WITHIN, F-value using F\_RATIO and significance using SIG

## G. Time series analysis and trend

(0.5 Days) Fundamentals of time series analysis: Components, stationarity, autocorrelation, autocovariance, periodicity - Smoothing: moving average, exponential smoothing - Trend calculations using linear regression - seasonal decomposition and residual analysis

## A. PHP



### (i) Boot Camp



#### Overview

|                      |                                       |
|----------------------|---------------------------------------|
| <b>Course ID</b>     | 2020331                               |
| <b>Language</b>      | en                                    |
| <b>Duration</b>      | 5 Days                                |
| <b>Delivery mode</b> | Classroom                             |
| <b>Course Type</b>   |                                       |
| <b>Target Group</b>  | Programmers, Web developers           |
| <b>Prerequisites</b> | HTML, knowledge of web design program |
| <b>Method</b>        | Lecture with examples and exercises.  |
| <b>Course level</b>  | Beginning                             |



#### Course Dates

| Chicago                                   | Miami                                     | New York                            |
|---|---|-------------------------------------|
| 2,700.00 USD                              | 2,500.00 USD                              | 2,700.00 USD                        |
| 03-07 Aug<br>28 Sep - 02 Oct<br>23-27 Nov | 07-11 Sep<br>02-06 Nov<br>28 Dec - 01 Jan | 17-21 Aug<br>12-16 Oct<br>07-11 Dec |

Prices plus local taxes.



#### Course Description

Dieses PHP-Seminar zeigt angehenden PHP-Programmierern die Grundlagen der Syntax, der Objektorientierung und erarbeitet die Anwendungsentwicklung in PHP mit einem Überblick über die PHP-Funktionsbibliothek, die XML-Verarbeitung und natürlich den Datenbankeinsatz mit MySQL. Im Gegensatz zum PHP-Grundkurs-Seminar richtet es sich an Teilnehmer, die bereits grundlegende Kenntnisse in einer Programmiersprache haben und fordert ein höheres Lerntempo. Daher sind die Bereiche der allgemeinen Syntax von PHP und der PHP-Objektorientierung nicht in der Länge zu finden wie in einem gewöhnlichen Anfänger-Seminar. Auch sollen die Teilnehmer zum Seminarende in der Lage sein, Anwendungen in PHP mit Datenbank- und XML-Einsatz unter Verwendung gängiger Entwurfsmuster (Design Patterns) aus dem Standard- und Enterprise-Katalog zu programmieren.



#### Course Outline

##### A. Syntax

(0.75 Days) Basic Syntax - Types - Variables and Predefined Variables - Constants - Expressions - Operators - Control Structures - Functions - Arrays

##### B. Classes and Objects

(1 Day) Classes and Objects: Constructors and Destructors, Visibility, Inheritance, Class Abstraction, Interfaces - Magic Methods - Namespaces - Exceptions and Predefined Exceptions - Predefined Interfaces and Classes - Object Serialization

## **C. Forms**

(0.25 Days) HTML Form Design - Validation - Data Transmission and Processing - File Upload - Master/Detail Forms - Tunneled and Branched Forms - Cookies - Session Handling

## **D. PHP Functions and Class Library**

(0.5 Days) Date and Time - File System Operations - String Operations and Text Processing

## **E. Database Access**

(0.5 Days) PHP Data Objects vs. DB-specific PHP Functions - Connections and Connection Management - Transactions and Auto-Commit - Prepared Statements and Stored Procedures - Errors and Error Handling

## **F. XML Handling**

(0.5 Days) Processing and Creating XML using SimpleXML and DOM (Document Object Model) - XSLT and XPath in PHP - Validation using DTD and XML Schema in PHP - Reading and Writing XML using XMLWriter and XMLReader

## **G. Design Patterns and PHP**

(1 Day) Behavioral Patterns: Command, Template Method, Strategy, Visitor, Chain of Responsibility, Iterator - Structural Patterns: Composite, Decorator, Front Controller - Creational Patterns: Singleton, Factory Method, Abstract Factory, Lazy Initialization

## **H. Enterprise Application Patterns and PHP**

(0.5 Days) Domain Logic Patterns: Transaction Script, Domain Model Table Module, Service Layer - Data Source Architectural Patterns: Table Data Gateway, Row Data Gateway, Active Record, Data Mapper - Web Presentation Patterns: Model View Controller, Front Controller, Template View, Transform View, Application Controller





## (ii) Design Patterns



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020336                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | PHP Basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 13-14 Aug<br>08-09 Oct<br>03-04 Dec | 20-21 Aug<br>15-16 Oct<br>10-11 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



### Course Description

A design pattern is a general reusable solution to a commonly occurring problem within a given context in software design. A design pattern is not a finished design that can be transformed directly into source or machine code. It is a description or template for how to solve a problem that can be used in many different situations. Patterns are formalized best practices that the programmer must implement themselves in the application. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. This training presents a selection of the GoF (Gang of Four) patterns which can be used in PHP and for web application development. After the training you will be capable of defining the basic usage scenarios and situations where these patterns can be helpful and you will be able to apply these patterns to real-world design problems.



### Course Outline

#### A. Creational Patterns

Singleton (Ensure a class has only one instance, and provide a global point of access to it.) - Factory Method (Define an interface for creating a single object, but let subclasses decide which class to instantiate. Factory Method lets a class defer instantiation to subclasses.) - Abstract Factory (Provide an interface for creating families of related or dependent objects without specifying their concrete classes.) - Prototype (Specify the kinds of objects to create using a prototypical instance, and create new objects by copying this prototype.)

## **B. Structural Patterns**

Composite (Compose objects into tree structures to represent part-whole hierarchies. Composite lets clients treat individual objects and compositions of objects uniformly.) - Decorator (Attach additional responsibilities to an object dynamically keeping the same interface. Decorators provide a flexible alternative to subclassing for extending functionality.) - Facade (Provide a unified interface to a set of interfaces in a subsystem. Facade defines a higher-level interface that makes the subsystem easier to use.)

## **C. Behavioral Patterns**

Strategy (Define a family of algorithms, encapsulate each one, and make them interchangeable.) - Chain of Responsibility (Avoid coupling the sender of a request to its receiver by giving more than one object a chance to handle the request.) - Command (Encapsulate a request as an object, thereby letting you parameterize clients with different requests.) - Iterator (Provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.) - Template Method (Define the skeleton of an algorithm in an operation, deferring some steps to subclasses.) - Visitor (Represent an operation to be performed on the elements of an object structure.)



### (iii) Fundamentals



#### Overview

|                      |   |
|----------------------|---|
| <b>Course ID</b>     | 2020287   |
| <b>Language</b>      | en  |
| <b>Duration</b>      | 5 Days  |
| <b>Delivery mode</b> | Classroom   |
| <b>Course Type</b>   |   |
| <b>Target Group</b>  | Programmers, Web developers                         |
| <b>Prerequisites</b> | HTML basics, programming experience is an advantage |
| <b>Method</b>        | Lecture with examples and exercises.                |
| <b>Course level</b>  | Beginning   |



#### Course Dates

| Chicago                                   | Miami                                     | New York                                  |
|---|---|---|
| 2,850.00 USD                              | 2,650.00 USD                              | 2,850.00 USD                              |
| 07-11 Sep<br>02-06 Nov<br>28 Dec - 01 Jan | 03-07 Aug<br>28 Sep - 02 Oct<br>23-27 Nov | 10-14 Aug<br>05-09 Oct<br>30 Nov - 04 Dec |

Prices plus local taxes.



#### Course Description

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. PHP is now installed on more than 244 million websites and 2.1 million web servers. PHP code is interpreted by a web server with a PHP processor module which generates the resulting web page: PHP commands can be embedded directly into an HTML source document using both a procedural and an object-oriented programming style. This training makes heavily use of hands-on labs for teaching you all the necessary techniques to develop object-oriented web applications like designing the HTML front-end, accessing relational databases like MySQL or transforming XML data.



#### Course Outline

##### A. Syntax

(1 Day) Basic Syntax - Types - Variables and Predefined Variables - Constants - Expressions - Operators - Control Structures - Functions - Arrays

## **B. Classes and Objects**

(1.5 Days) Classes and Objects: Constructors and Destructors, Visibility, Inheritance, Class Abstraction, Interfaces - Magic Methods - Namespaces - Exceptions and Predefined Exceptions - Predefined Interfaces and Classes - Object Serialization

## **C. Forms**

(0.5 Days) HTML Form Design - Validation - Data Transmission and Processing - File Upload - Master/Detail Forms - Tunneled and Branched Forms - Cookies - Session Handling

## **D. PHP Functions and Class Library**

(1 Day) Date and Time - File System Operations - String Operations and Text Processing - XML Handling

## **E. Database Access**

(1 Day) PHP Data Objects vs. DB-specific PHP Functions - Connections and Connection Management - Transactions and Auto-Commit - Prepared Statements and Stored Procedures - Errors and Error Handling



## (iv) Object-Oriented Programming (OOP)



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020332                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | PHP Basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                | Miami                  | New York                            |
|------------------------|------------------------|-------------------------------------|
| 1,400.00 USD           | 1,350.00 USD           | 1,400.00 USD                        |
| 17-18 Sep<br>19-20 Nov | 10-11 Sep<br>12-13 Nov | 20-21 Aug<br>15-16 Oct<br>10-11 Dec |

Prices plus local taxes.



### Course Description

Object-oriented programming (OOP) is a programming paradigm that represents concepts as "objects" that have data fields (attributes that describe the object) and associated procedures known as methods. Objects, which are usually instances of classes, are used to interact with one another to design applications. PHP 5 introduced private and protected member variables and methods, along with abstract classes, final classes, abstract methods, and final methods. It also introduced a standard way of declaring constructors and destructors, and a standard exception handling model. Furthermore, PHP 5 added interfaces and allowed for multiple interfaces to be implemented. After completing this training you will understand the fundamental concepts of Object-oriented Programming and you will know how to use these concepts in your PHP code. After a short introduction into each OOP-feature hands-on labs with programming exercises will help you to understand how to program classes and how to use them in your application and you will see that object-oriented software development will facilitate and speed up your programming style.



### Course Outline

#### A. Classes and Objects

(0.75 Days) Introduction - The OOP Basics - Classes and Objects - Properties and Methods - Class Constants - Constructors and Destructors - Visibility - Static Members - Namespaces - Objects and References - Cloning - Type Hinting - Relationships between Classes/Objects

## **B. Inheritance, Abstraction and Implementation**

(0.5 Days) Object Inheritance - Class Abstraction - Object Interfaces - Polymorphism - Dynamic Dispatch - OOP Design Principles

## **C. Reflection in PHP**

(0.125 Days) Dynamic Examination of Classes, Methods and Objects using PHP Functions - Reflection API - Dynamic Initialization of Objects and Invoking of Methods

## **D. Advanced PHP Techniques**

(0.25 Days) Magic Methods - Overloading - Object Iteration - Comparing Objects - Autoloading Classes - Object Serialization

## **E. Planning and Documenting using UML**

(0.125 Days) Overview of UML (Unified Modelling Language) - Class Diagrams for the Static and Structural View - Activity Diagrams and Sequence Diagrams or the Behavioral View



## (v) Oracle



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020312                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 1 Day                                |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | PHP Basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                | Miami                  | New York                            |
|------------------------|------------------------|-------------------------------------|
| 1,250.00 USD           | 1,200.00 USD           | 1,250.00 USD                        |
| 18-18 Sep<br>13-13 Nov | 04-04 Sep<br>30-30 Oct | 28-28 Aug<br>23-23 Oct<br>18-18 Dec |

Prices plus local taxes.



### Course Description

This PHP Oracle training is for PHP programmers developing applications for Oracle Database. It bridges the gap between the world of PHP and the universe of Oracle and shows how to use the PHP scripting language with Oracle Database. This training gives you the fundamental building blocks needed to create high-performance PHP Oracle Web applications.



### Course Outline

#### A. PHP OCI8 Extension

(0.5 Days) Connecting to Oracle Using OCI8 - Connection Types - Connection and Environment Errors - Transactions and Connections - Authorization and Authentication - Executing SQL Statements With OCI8 - Fetch Functions - Insert, Update, Delete, Create and Drop in PHP OCI8 - PHP Error Handling - Using Bind Variables in Prepared Statements - Improving Performance by Prefetching and Caching - Monitoring OCI8 SQL Statements - LIMIT, Auto-Increment, Last Insert ID and Multiple Inserts

#### B. PHP Data Objects

(0.5 Days) Connecting to Oracle Using PDO - Executing SQL Statements - Using Bind Variables in Prepared Statements - Transactions - PL/SQL-Integration in PDO

## **C. PL/SQL and PHP**

(0.5 Days) PL/SQL Overview - Blocks, Procedures, Packages and Triggers - Using PL/SQL With OCI8: Calling PL/SQL Code, Array Binding and PL/SQL Bulk Processing, Using REF CURSORS for Result Sets, Oracle Collections in PHP, Using PL/SQL and Oracle Object Types in PHP, Getting Output With DBMS\_OUTPUT, PL/SQL Backtraces in a PL/SQL Exception Handler

## **D. Using Large Objects in OCI8**

(0.25 Days) Working With LOBs in Oracle and PL/SQL - Inserting and Updating LOBs - Fetching LOBs - Temporary LOBs - Uploading and Displaying an Image - Working With BFILES

## **E. Using XML With Oracle and PHP**

(0.25 Days) Fetching Relational Rows as XML - Fetching Rows as Fully Formed XML - Using the SimpleXML Extension in PHP - Fetching XMLType Columns - Inserting Into XMLType Columns - Fetching an XMLType from a PL/SQL Function - XQuery XML Query Language





## (vi) XML Processing



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020290                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | PHP Basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Advanced                             |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 13-14 Aug<br>08-09 Oct<br>03-04 Dec |

Prices plus local taxes.



### Course Description

Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. It is defined in the XML 1.0 Specification produced by the W3C, and several other related specifications, all gratis open standards. Many application programming interfaces (APIs) have been developed to aid software developers with processing XML data, and several schema systems exist to aid in the definition of XML-based languages. After each training module you will be familiar with the fundamentals of such XML-related standards as DTD, XML Schema, XSLT or XPath. To build up your knowledge about using these technologies from a PHP application, the hands-on labs show you how to create, access, query and transform XML documents with the aid of built-in PHP functions and classes.



### Course Outline

#### A. Overview of XML Standards and XML Technologies

(0.25 Days) XML Standards and XML Processing Options - Modelling and Validating using DTD and XML Schema - Navigation and Filtering using XPath

#### B. SimpleXML

(0.25 Days) Loading and Processing XML in PHP - Using XPath - Error Handling

### **C. SAX and PHP XML Parser**

(0.25 Days) SAX Technology in PHP - SAX Events and Event Handlers for Elements, Attributes and other Nodes - Parsing Documents - Error Handling

### **D. DOM (Document Object Model)**

(0.5 Days) Writing XML Documents using DOM in PHP - Processing and Querying XML - Validating using XML Schema and DTD - Filtering and Querying using XPath - Error Handling

### **E. XML Processing using XSLT**

(0.5 Days) XSLT Fundamentals: Templates, Control Structures, Parameters - Transforming XML from PHP using XSLT Stylesheets - Configuring the XSLT Processor - Passing Parameters to Stylesheets - Error Handling

### **F. PHP Modules for XML Processing**

(0.25 Days) Reading and Writing of XML Data using XML Reader and XML Writer

## A. Software Design



### (i) Business Process Modeling using BPMN



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020790  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers, systems analysts, programmers, developers, consultants |
| <b>Prerequisites</b> | Knowledge in software development, project experience                    |
| <b>Method</b>        | Lecture with examples and exercises.                                     |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,850.00 USD                        | 1,800.00 USD                        | 1,850.00 USD                        |
| 06-07 Aug<br>01-02 Oct<br>03-04 Dec | 13-14 Aug<br>08-09 Oct<br>17-18 Dec | 20-21 Aug<br>15-16 Oct<br>10-11 Dec |

Prices plus local taxes.



#### Course Description

Business Process Management and Notation (BPMN) is a graphical representation for specifying business processes in a business process model. The primary goal of BPMN is to provide a standard notation readily understandable by all business stakeholders. These include the business analysts who create and refine the processes, the technical developers responsible for implementing them, and the business managers who monitor and manage them. Consequently, BPMN serves as a common language, bridging the communication gap that frequently occurs between business process design and implementation. This training explains the three diagram types of BPMN, their elements and functions, and their correct usage for modeling activities and processes.



#### Course Outline

##### A. Overview

BPMN Scope - BPMN Elements - BPMN Diagram Types - Use of Text, Color, Size, and Lines in a Diagram - Flow Object Connection Rules - BPMN Extensibility

## **B. Collaboration**

Basic Collaboration Concepts - Pool and Participant - Message Flow - Conversations - Process within Collaboration  
- Choreography within Collaboration

## **C. Process**

Basic Process Concepts - Activities - Items and Data - Events - Gateways - Compensation - Lanes - Process Instances,  
Unmodeled Activities, and Public Processes - Auditing - Monitoring

## **D. Choreography**

Basic Choreography Concepts - Data - Use of BPMN Common Elements - Choreography Activities - Events - Gateways  
- Choreography within Collaboration



## (ii) Requirements Analysis with Use Cases



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020943  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 1 Day  |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture and<br>discussion                                      |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                | Miami                               | New York               |
|------------------------|-------------------------------------|------------------------|
| 1,250.00 USD           | 1,200.00 USD                        | 1,250.00 USD           |
| 11-11 Sep<br>06-06 Nov | 14-14 Aug<br>16-16 Oct<br>18-18 Dec | 04-04 Sep<br>13-13 Nov |

Prices plus local taxes.



### Course Description

A use case is a list of steps, typically defining interactions between a role (actor) and a system, to achieve a goal. The actor can be a human or an external system. In the Unified Modeling Language, the relationships between the use cases and actors are represented in a Use Case Diagram. As an important requirement technique, use case has been widely used in modern software engineering over the last two decades. Use case driven development is a key method in the analysis / documentation and design step of a software project. This training teaches you how to write and formulate understandable and well-structured use cases.



### Course Outline

#### A. Use Cases and Their Role in Software Design

(0.1 Days) Introduction to Use Cases - The Advantages of Use Cases - Stakeholders and Actors and Their Goals - Graphic Symbols for Use Cases - The Use Case as a Contract for Behavior - Use Case Formats

#### B. Scope and Use Cases

(0.1 Days) Functional Scope - Design Scope - The Actor-Goal List - The Use Case Briefs - Using Graphical Icons to Highlight the Design Scope

## **C. Stakeholders and Actors**

(0.1 Days) Stakeholders - Primary Actors - Supporting Actors - The System Under Discussion

## **D. Named Goal Levels**

(0.1 Days) User Goals - Summary Level - Subfunctions - Finding the Right Goal Level - Graphical Icons to Highlight The Goal Level

## **E. Writing Use Cases**

(0.5 Days) Scenarios and Steps - Main Success Scenario as the Simple Case - Preconditions, Triggers, Guarantees - Extensions and Extension Handling - Linking Use Cases

## **F. Use Cases in UML**

(0.1 Days) The Use Case Diagram and its Elements - The Include-/Extend-Relationships - Generalization and Specialization for Actors and Use Cases

## A. Statistics



### (i) Design and Analysis of Experiments (DOE)



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2024704                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Engineers, Quality Assurance         |
| <b>Prerequisites</b> | General knowledge of math            |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                        | 1,600.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 03-04 Sep<br>29-30 Oct<br>24-25 Dec | 27-28 Aug<br>15-16 Oct<br>17-18 Dec |

Prices plus local taxes.



#### Course Description

This training shows engineers and other members of the quality-assurance department to design and analyze experiments for improving the quality, efficiency and performance of working systems. It covers basic statistical methods which are useful for the analysis of experimental data, presents the Analysis of Variance (ANOVA), and teaches how to use factorial experiments, two-level factorial designs, blocking and confounding systems for two-level factorials, two-level fractional factorial designs, regression modeling, and an overview of the Response Surface Methodology.



#### Course Outline

##### A. Basic Statistical Methods

(0.25 Days) Basic Statistical Concepts - Sampling and Sampling Distributions - Inferences About the Differences in Means, Randomized Designs: Hypothesis Testing, Confidence Intervals, Choice of Sample Size, Comparing a Single Mean to a Specified Value - Inferences About the Differences in Means, Paired Comparison Designs - Inferences About the Variances of Normal Distributions

##### B. Analysis of Variance (ANOVA)

(0.25 Days) The Analysis of Variance - Analysis of the Fixed Effects Model: Decomposition of the Total Sum of Squares, Statistical Analysis, Estimation of the Model Parameters - Model Adequacy Checking - Determining Sample Size - The Random Effects Model - The Regression Approach to the Analysis of Variance

## **C. Experiments with Blocking Factors**

(0.25 Days) The Randomized Complete Block Design: Statistical Analysis of the RCBD, Model Adequacy Checking, Estimating Model Parameters and the General Regression Significance Test - The Latin Square Design - The Graeco-Latin Square Design - Balanced Incomplete Block Designs

## **D. Factorial Experiments**

(0.5 Days) The Two-Factor Factorial Design: Statistical Analysis of the Fixed Effects Model, Model Adequacy Checking, Estimating the Model Parameters, Choice of Sample Size - The General Factorial Design - Fitting Response Curves and Surfaces - Blocking in a Factorial Design

## **E. Two-Level Factorial Designs**

(0.25 Days) The  $2^2$  Design - The  $2^3$  Design - The General  $2^k$  Design - A Single Replicate of the  $2^k$  Design -  $2^k$  Designs are Optimal Designs - The Addition of Center Points to the  $2^k$  Design - Blocking and Confounding Systems for Two-Level Factorials

## **F. Two-Level Fractional Factorial Designs**

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

## **G. The $3^k$ Factorial Design**

(0.125 Days) Notation and Motivation for the  $3^k$  Design - Confounding in the  $3^k$  Factorial Design - Fractional Replication of the  $3^k$  Factorial Design

## **H. Response Surface Methodology**

(0.25 Days) Introduction to Response Surface Methodology - The Method of Steepest Ascent - Analysis of a Second-Order Response Surface - Experimental Designs for Fitting Response Surfaces





## (ii) Statistical Quality Control



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2024702                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Engineers, Quality Assurance         |
| <b>Prerequisites</b> | General knowledge of math            |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,600.00 USD                        | 1,550.00 USD                              | 1,600.00 USD                        |
| 06-07 Aug<br>24-25 Sep<br>19-20 Nov | 10-11 Sep<br>05-06 Nov<br>31 Dec - 01 Jan | 30-31 Jul<br>17-18 Sep<br>12-13 Nov |

Prices plus local taxes.



### Course Description

This training provides a comprehensive treatment of the major aspects of using statistical methodology for quality control and improvement. Both traditional and modern methods are presented, including state-of-the-art techniques for statistical process monitoring and control and statistically designed experiments for process characterization and optimization. The training focuses on DMAIC (define, measure, analyze, improve, and control--the problem-solving strategy of six sigma).



### Course Outline

#### A. Modern Quality Management And Improvement

(0.125 Days) The Meaning of Quality and Quality Improvement - Statistical Methods for Quality Control and Improvement - Management Aspects of Quality Improvement - The DMAIC Problem Solving Process

#### B. Data Summary and Presentation

(0.125 Days) Describing Variation: The Stem-and-Leaf Plot, The Histogram, Numerical Summary of Data, The Box Plot, Probability Distributions - Important Discrete Distributions - Important Continuous Distributions - Probability Plots

## **C. Statistical Inference In Quality Control and Improvement**

(0.25 Days) Statistics and Sampling Distributions - Point Estimation of Process Parameters - Statistical Inference for a Single Sample - Statistical Inference for Two Samples - The Analysis of Variance (ANOVA)

## **D. Variables Control Charts**

(0.5 Days) Control Charts for  $\bar{x}$  and R: Statistical Basis of the Charts, Development and Use of  $\bar{x}$  and R Charts, Charts Based on Standard Values, Interpretation of  $\bar{x}$  and R Charts, The Operating-Characteristic Function, The Average Run Length for the  $\bar{x}$  Chart - Control Charts for  $\bar{x}$  and s: Construction and Operation of  $\bar{x}$  and s Charts, The  $\bar{x}$  and s Control Charts with Variable Sample Size, The  $s^2$  Control Chart - The Shewhart Control Chart for Individual Measurements

## **E. Attribute Control Charts**

(0.5 Days) The Control Chart for Fraction Nonconforming: Development and Operation of the Control Chart, Variable Sample Size, Applications in Transactional and Service Businesses, The Operating-Characteristic Function and Average Run Length Calculations - Control Charts for Nonconformities (Defects): Procedures with Constant Sample Size, Procedures with Variable Sample Size, Demerit Systems, The Operating-Characteristic Function, Dealing with Low Defect Levels - Choice Between Attributes and Variables Control Charts

## **F. Determining Process And Measurement Systems Capability**

(0.125 Days) Process Capability Analysis Using a Histogram or a Probability Plot - Process Capability Ratios - Process Capability Analysis Using a Control Chart - Process Capability Analysis with Attribute Data - Gauge and Measurement System Capability Studies

## **G. Designed Experiments In Process and Product Improvement**

(0.25 Days) Factorial Experiments: Statistical Analysis, Residual Analysis - The  $2^k$  Factorial Design: The  $2^2$  Design, The  $2^k$  Design for 3 and more Factors, Blocking and Confounding in the  $2^k$  Design - Fractional Replication of the  $2^k$  Design - Fractional Replication of the  $2^k$ : The One-Half Fraction of the  $2^k$  Design, The  $2^{k-p}$  Fractional Factorial Design

## **H. Sampling Procedures**

(0.125 Days) The Acceptance-Sampling Problem - Single-Sampling Plans for Attributes - Double, Multiple, and Sequential Sampling - Acceptance Sampling by Variables - Chain Sampling - Continuous Sampling

## A. UML



### (i) Design and Analysis



#### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020929  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 2 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 13-14 Aug<br>15-16 Oct<br>10-11 Dec | 20-21 Aug<br>08-09 Oct<br>26-27 Nov | 27-28 Aug<br>22-23 Oct<br>24-25 Dec |

Prices plus local taxes.



#### Course Description



#### Course Outline

### A. Modeling a System's Behavior using Use Cases

(0.25 Days) Advantages and Usage Scenarios of Use Cases - User Stories - Scope - Stakeholders and Actors - Goal Levels and their Hierarchy - Pre-/Post-Conditions, Triggers, Invariants - Scenarios - Use Case Formats - Use Cases in the Overall Process of a Project

### B. Modeling a System's Behavior using UML Behavior Diagrams

(0.25 Days) UML Use Case Diagram: System Boundaries, Actor, Use Case, Association, Generalization, Include / Extend Relationship - UML Activity Diagram: UML Metamodel, Action, Control and Object Flow, Object Nodes, Signals, Decisions and Logical Behavior, Connections, Forking, Associations, Condition, Interruption

## **C. Modeling of Data Structures with UML Structure Diagrams**

(0.5 Days) UML Class / Object Diagram - Class, Attributes, Operations - Relationships between Data - Aggregation and Composition of Classes - Inheritance by Generalization and Specialization - From UML Models to XML Schema and Relational Data Structures

## **D. Modeling Action and Interaction using UML Behavior Diagrams**

(0.5 Days) UML Activity Diagram: Action, Control Flow, Object Nodes, Signals, Decisions and Logical Flow, Connections, Forking, Associations, Conditions, Interruption, Expansion - UML Sequence Diagram: Lifeline, Messages, Interactions, Combined Fragments

## **E. Modeling the System's Architecture**

(0.5 Days) Possibilities and Options for using the UML in Modeling the System Architecture using UML Composite Structure Diagrams, the UML Component Diagram, and the UML Deployment Diagram - Modeling the System Architecture using MS Visio - Modeling the System's Structure and its Relationships between Database, Servers and Software Components



## (ii) Notation and Concepts



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020904  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 3 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,800.00 USD                        | 1,700.00 USD                              | 1,800.00 USD                        |
| 10-12 Aug<br>05-07 Oct<br>07-09 Dec | 17-19 Aug<br>12-14 Oct<br>30 Nov - 02 Dec | 24-26 Aug<br>19-21 Oct<br>21-23 Dec |

Prices plus local taxes.



### Course Description

Unified Modeling Language (UML) is a standardized, general-purpose modeling language for software engineering and modeling. The Unified Modeling Language includes a set of graphic notation techniques to create visual models of object-oriented software-intensive systems. The Unified Modeling Language (UML) offers a standard way to visualize a system's architectural blueprints, including elements such as: activities actors, business processes, database schemas, (logical) components, programming language statements, and reusable software components. UML has 14 types of diagrams divided into two categories. Seven diagram types represent structural information, and the other seven represent general types of behavior, including four that represent different aspects of interactions. This training covers these diagrams and their elements, as well as their relationships and their usage scenarios in the software design life cycle.



### Course Outline

#### A. UML Structure Diagrams: Class / Object Diagram and Package Diagram

(0.75 Days) Diagrams: Class Diagram, Package Diagram, Object Diagram - Node Types: Class, Interface, InstanceSpecification, Package - Path Types: Aggregation, Association, Composition, Dependency, Generalization, InterfaceRealization, Realization, Usage, Package Merge, PackageImport

## **B. UML Structure Diagrams: Composite Structure Diagram, Component Diagram, Deployment Diagram**

(0.5 Days) Component Diagram: Component, Interface, ComponentRealization, Interface Realization, Usage Dependencies, Class, Artifact, Port - Composite Structure Diagram: Part, Port, Collaboration, CollaborationUse, Connector, Role Binding - Deployment Diagram: Artifact, Node, Deployment Specification, Association, Dependency, Generalization, Deployment, Manifestation

## **C. UML Behavior Diagrams: Use Case Diagram and Activity Diagram**

(0.5 Days) Activity Diagram: Action, Activity and ActivityPartition, Modeling the Logical Flow (ControlFlow and ObjectFlow, Nodes: ActivityFinal, ActivityNode, ControlNode, DecisionNode, FinalNode, FlowFinal, ForkNode, InitialNode, JoinNode, MergeNode), Modeling Data (DataStore, ObjectNode), Modeling Containment (InterruptibleActivityRegion, ExceptionHandler, ExpansionRegion) - Use Case Diagram: Actor, Extend/Include Relationship, UseCase

## **D. UML Behavior Diagrams: State Machine Diagram**

(0.25 Days) State Machine, Typology of States (Choice / History / Initial/ Junction Pseudostate, Composite State, Final State), Transition between States, Actions (Receive / Send Signal Action)

## **E. UML Behavior Diagrams: Sequence Diagram and Communication Diagram**

(0.5 Days) Sequence Diagram: Frame, Lifeline, Execution Specification, InteractionUse, CombinedFragment, Continuations, Coregion, Modeling Constraints (TimeConstraint, DurationConstraint, StateInvariant), Modelling Messages (Message, Found / Lost Message) - Communication Diagram: Frame, Lifeline, Message Interchange

## **F. UML Behavior Diagrams: Timing Diagram and Interaction Overview Diagram**

(0.5 Days) Interaction Overview Diagram: Frame, Interaction and InteractionUse - Timing Diagram: Frame, Message, Lifeline, Modeling Time



## (iii) Project Management using UML, BPMN and Enterprise Architect



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020483  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 4 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Project managers,<br>systems analysts,<br>programmers,<br>developers,<br>consultants |
| <b>Prerequisites</b> | Project Experience   |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.   |
| <b>Course level</b>  | Advanced   |



### Course Dates

| Chicago                                   | Miami                  | New York                            |
|---|------------------------|-------------------------------------|
| 2,100.00 USD                              | 1,950.00 USD           | 2,100.00 USD                        |
| 03-06 Aug<br>28 Sep - 01 Oct<br>23-26 Nov | 14-17 Sep<br>09-12 Nov | 17-20 Aug<br>12-15 Oct<br>07-10 Dec |

Prices plus local taxes.



### Course Description

Enterprise Architect is a visual platform for designing and constructing software systems, for business process modeling, and for more generalized modeling purposes. Enterprise Architect is a progressive tool that covers all aspects of the development cycle, providing full traceability from the initial design phase through to deployment, maintenance, testing and change control. Enterprise Architect helps individuals, groups and large organizations model and manage complex information. Often this relates to software development and IT systems design and deployment, but it can also relate to business analysis and business process modeling. Enterprise Architect integrates and connects a wide range of structural and behavioral information, helping to build a coherent and verifiable architectural model, either what-is or what-will-be. Tools to manage versions, track differences, audit changes and enforce security help control project development and enforce compliance with standards. This training shows you how to make the most out of UML and Enterprise Architect when it comes to software and application development.



### Course Outline

#### A. Requirement Models

(0.25 Days) Create Requirements - View Requirements - Import Requirements Using CSV - Model Requirements - Requirement Properties - Extend Requirement Properties - Connect Requirements - Trace Use Of Requirements - Relationship Matrix - Traceability Window - Manage Requirement Changes - Report on Requirements

## **B. Business Models using BPMN**

(1 Day) Business Process: Pool and Lane, Activity, Event, Data Object and Data Store, Gateway, Message - Choreography - Collaboration - Conversation - BPMN Simulation Using the Model Simulator

## **C. Business Rules**

(0.25 Days) Create a Rule Model - Create a Business Domain Model - Create a Rule Flow Model - Compose Business Rules - Validate Business Rules - Code Generation for Business Rules

## **D. Database Engineering**

(0.25 Days) Data Models (Conceptual, Logical and Physical Models) and Interconnecting Models - Import Database Schema - Generate DDL - Physical Data Model

## **E. Software and Systems Modeling using UML**

(1.25 Days) UML Diagrams - UML Structural Models - UML Behavioral Models - UML Elements - UML Connectors - UML Stereotypes - Design Patterns - UML Profiles

## **F. Projects and Teams**

(0.25 Days) File-Based Repositories - Server-Based Repositories - Team Development - Change Management - Project Management - Project Maintenance - Sharing Reference Data - Reference Data - Team Review Tools - Project Task Allocation - Project Calendar - Reporting - Creating and Monitoring Maintenance Items / Change and Issue Items on Project Elements

## **G. Model Simulation**

(0.25 Days) File-Based Repositories - Server-Based Repositories - Team Development - Change Management - Project Management - Project Maintenance - Sharing Reference Data - Reference Data - Team Review Tools - Project Task Allocation - Project Calendar - Reporting

## **H. Reporting**

(0.5 Days) Specifying Content - RTF / HTML Documentation - Select, Group and Order Packages Together in Virtual Documents - Using the Template Editor - Document Generator





## (iv) UML Modeling using Enterprise Architect



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2020145  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 3 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,800.00 USD                        | 1,700.00 USD                              | 1,800.00 USD                        |
| 17-19 Aug<br>05-07 Oct<br>23-25 Nov | 31 Aug - 02 Sep<br>19-21 Oct<br>07-09 Dec | 07-09 Sep<br>26-28 Oct<br>14-16 Dec |

Prices plus local taxes.



### Course Description

Unified Modeling Language (UML) is a standardized, general-purpose modeling language for software engineering and modeling. The Unified Modeling Language includes a set of graphic notation techniques to create visual models of object-oriented software-intensive systems. The Unified Modeling Language (UML) offers a standard way to visualize a system's architectural blueprints, including elements such as: activities actors, business processes, database schemas, (logical) components, programming language statements, and reusable software components. UML has 14 types of diagrams divided into two categories. Seven diagram types represent structural information, and the other seven represent general types of behavior, including four that represent different aspects of interactions. This training covers these diagrams and their elements, as well as their relationships and their usage scenarios in the software design life cycle.



### Course Outline

#### A. UML Structure Diagrams: Class / Object Diagram and Package Diagram

(0.75 Days) Diagrams: Class Diagram, Package Diagram, Object Diagram - Node Types: Class, Interface, InstanceSpecification, Package - Path Types: Aggregation, Association, Composition, Dependency, Generalization, InterfaceRealization, Realization, Usage, Package Merge, PackageImport

## **B. UML Structure Diagrams: Composite Structure Diagram, Component Diagram, Deployment Diagram**

(0.5 Days) Component Diagram: Component, Interface, ComponentRealization, Interface Realization, Usage Dependencies, Class, Artifact, Port - Composite Structure Diagram: Part, Port, Collaboration, CollaborationUse, Connector, Role Binding - Deployment Diagram: Artifact, Node, Deployment Specification, Association, Dependency, Generalization, Deployment, Manifestation

## **C. UML Behavior Diagrams: Use Case Diagram and Activity Diagram**

(0.5 Days) Activity Diagram: Action, Activity and ActivityPartition, Modeling the Logical Flow (ControlFlow and ObjectFlow, Nodes: ActivityFinal, ActivityNode, ControlNode, DecisionNode, FinalNode, FlowFinal, ForkNode, InitialNode, JoinNode, MergeNode), Modeling Data (DataStore, ObjectNode), Modeling Containment (InterruptibleActivityRegion, ExceptionHandler, ExpansionRegion) - Use Case Diagram: Actor, Extend/Include Relationship, UseCase

## **D. UML Behavior Diagrams: State Machine Diagram**

(0.25 Days) State Machine, Typology of States (Choice / History / Initial/ Junction Pseudostate, Composite State, Final State), Transition between States, Actions (Receive / Send Signal Action)

## **E. UML Behavior Diagrams: Sequence Diagram and Communication Diagram**

(0.5 Days) Sequence Diagram: Frame, Lifeline, Execution Specification, InteractionUse, CombinedFragment, Continuations, Coregion, Modeling Constraints (TimeConstraint, DurationConstraint, StateInvariant), Modelling Messages (Message, Found / Lost Message) - Communication Diagram: Frame, Lifeline, Message Interchange

## **F. UML Behavior Diagrams: Timing Diagram and Interaction Overview Diagram**

(0.5 Days) Interaction Overview Diagram: Frame, Interaction and InteractionUse - Timing Diagram: Frame, Message, Lifeline, Modeling Time



## (v) UML using Altova UModel



### Overview

|                      |  |
|----------------------|--|
| <b>Course ID</b>     | 2024712  |
| <b>Language</b>      | en   |
| <b>Duration</b>      | 3 Days   |
| <b>Delivery mode</b> | Classroom  |
| <b>Course Type</b>   |  |
| <b>Target Group</b>  | Programmers,<br>software architects,<br>managers,              |
| <b>Prerequisites</b> | Knowledge<br>in software<br>development, project<br>experience |
| <b>Method</b>        | Lecture with<br>examples and<br>exercises.                     |
| <b>Course level</b>  | Beginning  |



### Course Dates

| Chicago                             | Miami                  | New York                            |
|-------------------------------------|------------------------|-------------------------------------|
| 1,800.00 USD                        | 1,700.00 USD           | 1,800.00 USD                        |
| 24-26 Aug<br>19-21 Oct<br>21-23 Dec | 07-09 Sep<br>09-11 Nov | 03-05 Aug<br>28-30 Sep<br>23-25 Nov |

Prices plus local taxes.



### Course Description

Unified Modeling Language (UML) is a standardized, general-purpose modeling language for software engineering and modeling. The Unified Modeling Language includes a set of graphic notation techniques to create visual models of object-oriented software-intensive systems. The Unified Modeling Language (UML) offers a standard way to visualize a system's architectural blueprints, including elements such as: activities actors, business processes, database schemas, (logical) components, programming language statements, and reusable software components. UML has 14 types of diagrams divided into two categories. Seven diagram types represent structural information, and the other seven represent general types of behavior, including four that represent different aspects of interactions. This training covers these diagrams and their elements, as well as their relationships and their usage scenarios in the software design life cycle.



### Course Outline

#### A. UML Structure Diagrams: Class / Object Diagram and Package Diagram

(0.75 Days) Diagrams: Class Diagram, Package Diagram, Object Diagram - Node Types: Class, Interface, InstanceSpecification, Package - Path Types: Aggregation, Association, Composition, Dependency, Generalization, InterfaceRealization, Realization, Usage, Package Merge, PackageImport

## **B. UML Structure Diagrams: Composite Structure Diagram, Component Diagram, Deployment Diagram**

(0.5 Days) Component Diagram: Component, Interface, ComponentRealization, Interface Realization, Usage Dependencies, Class, Artifact, Port - Composite Structure Diagram: Part, Port, Collaboration, CollaborationUse, Connector, Role Binding - Deployment Diagram: Artifact, Node, Deployment Specification, Association, Dependency, Generalization, Deployment, Manifestation

## **C. UML Behavior Diagrams: Use Case Diagram and Activity Diagram**

(0.5 Days) Activity Diagram: Action, Activity and ActivityPartition, Modeling the Logical Flow (ControlFlow and ObjectFlow, Nodes: ActivityFinal, ActivityNode, ControlNode, DecisionNode, FinalNode, FlowFinal, ForkNode, InitialNode, JoinNode, MergeNode), Modeling Data (DataStore, ObjectNode), Modeling Containment (InterruptibleActivityRegion, ExceptionHandler, ExpansionRegion) - Use Case Diagram: Actor, Extend/Include Relationship, UseCase

## **D. UML Behavior Diagrams: State Machine Diagram**

(0.25 Days) State Machine, Typology of States (Choice / History / Initial/ Junction Pseudostate, Composite State, Final State), Transition between States, Actions (Receive / Send Signal Action)

## **E. UML Behavior Diagrams: Sequence Diagram and Communication Diagram**

(0.5 Days) Sequence Diagram: Frame, Lifeline, Execution Specification, InteractionUse, CombinedFragment, Continuations, Coregion, Modeling Constraints (TimeConstraint, DurationConstraint, StateInvariant), Modelling Messages (Message, Found / Lost Message) - Communication Diagram: Frame, Lifeline, Message Interchange

## **F. UML Behavior Diagrams: Timing Diagram and Interaction Overview Diagram**

(0.5 Days) Interaction Overview Diagram: Frame, Interaction and InteractionUse - Timing Diagram: Frame, Message, Lifeline, Modeling Time

## A. XML



### (i) Altova Mapforce



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020987                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 30-31 Jul<br>24-25 Sep<br>19-20 Nov | 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 03-04 Sep<br>29-30 Oct<br>24-25 Dec |

Prices plus local taxes.



#### Course Description

Altova MapForce is an any-to-any graphical data mapping, conversion, and integration tool that maps data between any combination of XML, database, flat file, EDI, Excel, XBRL, and/or Web service, then transforms data instantly or autogenerates royalty-free data integration code for the execution of recurrent conversions. It provides powerful, visual XML mapping functionality for instantly transforming XML data from one XML format to any another XML format based on XML Schema or namespace aware DTDs, and can even generate an XML mapping component from an XML instance file. It includes the FlexText utility for parsing and converting text files such as mainframe text reports, text-based log files, and other legacy text file types in mapping designs. With its visual interface, FlexText lets you insert an existing text file and extract the portions you want to convert in the MapForce mapping interface. This training shows you in many hands-on labs how to develop mapping solutions for the above-mentioned combinations and to make the most of MapForce.



#### Course Outline

### A. XML Mapping

(0.25 Days) MapForce User Interface - Mapping between Components - Multiple XML Files from Single XML Source File, Excel Rows or per Table - Filtering - Sorting - Loops, Groups and Hierarchies - Code Generator

## **B. Database Mapping**

(0.125 Days) Setting up the XML-To-Database Mapping - Table Preview Customization - Components and Table Relationships - Database Actions: Insert, Update, Delete, Ignore - Generating Database Output Values - Table Actions - SQL WHERE / ORDER Component - SQL SELECT Statements as Virtual Tables - Stored Procedures - Querying Databases Directly - Database Query Tab

## **C. Text Mapping**

(0.25 Days) Mapping CSV and Text Files: Mapping CSV Files to XML / XML to CSV, Creating Hierarchies From CSV and Fixed Length Text Files, CSV File Options, Mapping Fixed Length Text Files (to a Database) - MapForce FlexText: Creating Split Conditions, Defining Multiple Conditions per Container/Fragment, Using FlexText Templates in MapForce, Using FlexText as a Target Component

## **D. Web Services Mapping**

(0.125 Days) Creating Web Service Projects from WSDL Files - Calling Web Services

## **E. General Functions**

(0.25 Days) Global Resources - Dynamic Input/Output Files per Component - Intermediate Variables - User-Defined Functions - Built-In Functions - Using the Command Line - Project Management - Chained Mappings / Pass-Through Components - Sequence of Processing Mapping Components - Merging Multiple Files into One Target - Documenting Mapping Projects



## (ii) Altova Stylevision



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020986                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                                     | New York               |
|-------------------------------------|---|------------------------|
| 1,400.00 USD                        | 1,350.00 USD                              | 1,400.00 USD           |
| 03-04 Sep<br>29-30 Oct<br>24-25 Dec | 10-11 Sep<br>05-06 Nov<br>31 Dec - 01 Jan | 17-18 Sep<br>12-13 Nov |

Prices plus local taxes.



### Course Description

Altova StyleVision is a WYSIWIG tool for designing documents, reports, and forms based on XML, SQL database, and XBRL inputs. It makes the power of XSLT available in an intuitive and visual design tool, and adds rich content such as charts, making it possible for designers and developers to focus on their target designs (in HTML, PDF, Word/ Open XML, and other formats) rather than XSLT details. With StyleVision, a single design can be used to automatically publish in the above-mentioned formats. The same visual design tool also produces Authentic enterprise forms, which empower business users to analyze and update information stored in XML and SQL systems. This training helps you to understand the principles of Stylevision and to design your own documents, forms and reports based on XML and database input.



### Course Outline

#### A. Presentation of XML Data

Creating a New SPS - Dynamic and Static Content - Simple Formatting and Transformations - Creating and Applying Global Templates - Modular stylesheets: Available Module Objects, Creating a Modular Stylesheet

#### B. Advanced Techniques

XPath Overview - Automatic Calculations and Conditions using XPath - Grouping and Sorting - Parameters and variables - Table of Contents - Links and References, Bookmarks - Design Fragments - Multiple Schema Sources

## **C. Font and Paragraph Formatting**

Working with CSS Styles - External Stylesheets - External and Internal CSS styles - Font Styles - Page Layout Properties, Containers, Background - Keeps and Breaks - Paragraph Formatting and Alignment - PDF Bookmarks - Document Sections

## **D. Altova Authentic forms**

Stylesheets for the Authentic View: Overview - Creating Forms Based on XML Schema - Form Objects: Fields, Tables, Lists, and Calendars - Working with Databases: Connecting to a Database, Select the Database Data, XML Databases, DB Filters

## **E. Design Objects**

Inserting XML Content as Text - Sorting and grouping - Using Data Input Elements - Lists and Tables - Graphics - Bookmarks and Hyperlinks - Automatic Calculations - XPath-Conditions

## **F. Charts and Reports**

Chart Basics - Typology of Charts: Pie Charts, Bar Charts, Line Charts, Value Line Charts, Area Charts, Candlestick Charts, Gauge Charts, Overlay Charts - Changing the Appearance of a Chart - Graphics - Tables





### (iii) Altova XMLSpy



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020299                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML Fundamentals                     |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                               | New York                                  |
|-------------------------------------|-------------------------------------|---|
| 1,800.00 USD                        | 1,700.00 USD                        | 1,800.00 USD                              |
| 07-09 Sep<br>02-04 Nov<br>28-30 Dec | 03-05 Aug<br>28-30 Sep<br>23-25 Nov | 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec |

Prices plus local taxes.



#### Course Description

Altova XMLSpy is a very advanced XML editor for modeling, editing, transforming, and debugging XML-related technologies. It offers a very complex XML interface, a graphical XML Schema designer, a code generator, file converters, debuggers, full database integration, support for XSLT, XPath, XQuery, WSDL and SOAP. This training walks you through the application while providing you with a fundamental knowledge of various XML technologies.



#### Course Outline

##### A. General features of XMLSpy

(0.5 Days) XML Documents - Editing Views - DTDs and XML Schemas - Project Management and Altova Global Resources - Databases and Data Integration - Text Files - File/Directory Comparisons - Templates

##### B. XML Schema-Editor

(0.75 Days) Element Declarations - Attribute Declarations - Complex Type Definitions - Attribute Group Definitions - Model Group Definitions - Simple Type Definitions - Schemas and Namespaces: Access and Composition - Editor: Editing in Text View, Grid View, and Schema View - XML Schema features in XMLSpy

##### C. XPath Editor

(0.25 Days) Path Expressions: Axes, Steps, Node Tests - Predicates and Filters - Function Calls

## **D. Queries using XQuery**

(0.25 Days) FLWOR Expressions: For and Let Clauses, Where Clause, Order By and Return Clauses - Direct Element Constructors - Computed Constructors - Ordered and Unordered Expressions - Comparison Expressions - Conditional Expressions

## **E. Transformations using XSLT**

(0.75 Days) Stylesheet Structure - Template Rules and XPath-Patterns - Named Templates - Repetition - Conditional Processing - Variables and Parameters - Creating Nodes and Sequences - Sorting and Grouping

## **F. Web Services**

(0.25 Days) WSDL documents - PortType - Binding - Service and Ports - Validating the WSDL Document - Connecting to a Web Service and Opening Files - Sending a SOAP Request from the WSDL File - Creating WSDL Documentation - SOAP document structure - SOAP Debugger - SOAP Validation

## **G. Altova Authentic and Altova Stylevision**

(0.25 Days) Opening an XML Document in Authentic View - Authentic View Interface - Entering Data in Authentic View - Tables in Authentic View - Altova Stylevision



## (iv) Fundamentals (Long)



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020302                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 5 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | no                                   |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 2,550.00 USD                        | 2,350.00 USD                              | 2,550.00 USD                        |
| 17-21 Aug<br>05-09 Oct<br>23-27 Nov | 31 Aug - 04 Sep<br>19-23 Oct<br>07-11 Dec | 07-11 Sep<br>26-30 Oct<br>14-18 Dec |

Prices plus local taxes.



### Course Description

Extensible Markup Language (XML) is a simple, very flexible text format designed to meet the challenges of large-scale electronic publishing but also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere. It is defined in the XML 1.0 Specification produced by the W3C, and several other related specifications, all gratis open standards. Many application programming interfaces (APIs) have been developed to aid software developers with processing XML data, and several schema systems exist to aid in the definition of XML-based languages. As of 2009, hundreds of document formats using XML syntax have been developed - both for technical usage scenarios as well as for data exchange between companies. This training provides an overview of the big family of XML technologies incl. hands-on labs, various examples, and case studies.



### Course Outline

#### A. XML Fundamentals and DTD

(0.75 Days) Well-Formed XML Documents - Common Syntactic Constructs - Character Data and Markup - Comments - Processing Instructions - CDATA Sections - Prolog and Document Type Declaration- Start-Tags, End-Tags, and Empty-Element Tags - DTD Fundamentals: Declaration of Elements and Attributes, Attribute-List, Conditional Sections, Mixed Content

## **B. Document Modeling using XML Schema**

(1.25 Days) Principles of Document Modeling - Defining Elements, Attributes and Groups - Complex Documents using Global Complex Types and Derivation - Datatypes: Pre-defined XML Schema Datatypes, User-defined Datatypes - Modular XML Schema Documents using Inclusion, Import and Redefinition - Namespaces

## **C. Localization, Navigation and Filtering using XPath**

(0.25 Days) Axes and Node Tests - Location Paths - Predicates and Filters - Functions

## **D. Transformations using XSLT**

(1.5 Days) Principles of XSLT - Template: Rules and Patterns, Named Templates, Modes - Control structures: Conditional Processing and Repetition - Sorting, Grouping and Numbering - Modular Stylesheets using Inclusion and Import - Variables and Parameters - Output of HTML, XML, and Text

## **E. XML Standards for Web Services**

(0.25 Days) WSDL: Service Definition, Types, Messages and Message Parts, Port Types, Bindings, Ports, Services - SOAP: Message Structure (Envelope, Header, Body), SOAP Processing Model and Attributes, Fault Message

## **F. XML and Relational Databases**

(0.5 Days) Export from Relational Data into XML using SQL - Decomposition of XML into Relational Data - Storing of XML in Relational DBs - Processing, Filtering and Querying of XML - Comparison: Oracle, MS SQL Server, IBM DB2

## **G. Querying XML using XQuery**

(0.5 Days) FLWOR Expressions: For and Let Clauses, Where Clause, Order By and Return Clauses - Constructors: Direct Element Constructors and Computed Constructors for Elements, Attributes and Other Nodes - Conditional Expressions



## (v) Fundamentals (Short)



### Overview

|                      |                             |
|----------------------|-----------------------------|
| <b>Course ID</b>     | 2020303                     |
| <b>Language</b>      | en                          |
| <b>Duration</b>      | 2 Days                      |
| <b>Delivery mode</b> | Classroom                   |
| <b>Course Type</b>   |                             |
| <b>Target Group</b>  | Programmers, Web developers |
| <b>Prerequisites</b> | no                          |
| <b>Method</b>        | Lecture and discussion      |
| <b>Course level</b>  | Beginning                   |



### Course Dates

| Chicago                             | Miami                               | New York   |
|-------------------------------------|-------------------------------------|--|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                                     |
| 03-04 Sep<br>22-23 Oct<br>10-11 Dec | 27-28 Aug<br>15-16 Oct<br>03-04 Dec | 30-31 Jul<br>17-18 Sep<br>05-06 Nov<br>24-25 Dec |

Prices plus local taxes.



### Course Description

Extensible Markup Language (XML) is a simple, very flexible text format designed to meet the challenges of large-scale electronic publishing but also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere. It is defined in the XML 1.0 Specification produced by the W3C, and several other related specifications, all gratis open standards. Many application programming interfaces (APIs) have been developed to aid software developers with processing XML data, and several schema systems exist to aid in the definition of XML-based languages. As of 2009, hundreds of document formats using XML syntax have been developed - both for technical usage scenarios as well as for data exchange between companies. This training provides an overview of the big family of XML technologies. Hands-on labs can be found in our other trainings presenting the same topics in more days and in greater depth. This training, however, makes use of presentations and prepared examples and case studies.



### Course Outline

#### A. XML Fundamentals and DTD

(0.25 Days) Well-Formed XML Documents - Common Syntactic Constructs - Character Data and Markup - Comments - Processing Instructions - CDATA Sections - Prolog and Document Type Declaration- Start-Tags, End-Tags, and Empty-Element Tags - DTD Fundamentals: Declaration of Elements and Attributes, Attribute-List, Conditional Sections, Mixed Content

## **B. Document Modeling using XML Schema**

(0.25 Days) Principles of Document Modeling - Defining Elements, Attributes and Groups - Complex Documents using Global Complex Types and Derivation - Datatypes: Pre-defined XML Schema Datatypes, User-defined Datatypes - Modular XML Schema Documents using Inclusion, Import and Redefinition - Namespaces

## **C. Localization, Navigation and Filtering using XPath**

(0.125 Days) Axes and Node Tests - Location Paths - Predicates and Filters - Functions

## **D. Transformations using XSLT**

(0.25 Days) Principles of XSLT - Template: Rules and Patterns, Named Templates, Modes - Control structures: Conditional Processing and Repetition - Sorting, Grouping and Numbering - Modular Stylesheets using Inclusion and Import - Variables and Parameters - Output of HTML, XML, and Text

## **E. XML Standards for Web Services**

(0.125 Days) WSDL: Service Definition, Types, Messages and Message Parts, Port Types, Bindings, Ports, Services - SOAP: Message Structure (Envelope, Header, Body), SOAP Processing Model and Attributes, Fault Message

## **F. XML and Relational Databases**

(0.125 Days) Export from Relational Data into XML using SQL - Decomposition of XML into Relational Data - Storing of XML in Relational DBs - Processing, Filtering and Querying of XML - Comparison: Oracle, MS SQL Server, IBM DB2



## (vi) Relax NG



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020978                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 27-28 Aug<br>22-23 Oct<br>17-18 Dec | 13-14 Aug<br>08-09 Oct<br>24-25 Dec | 30-31 Jul<br>24-25 Sep<br>19-20 Nov |

Prices plus local taxes.



### Course Description

RELAX NG (REgular LAnguage for XML Next Generation) is a schema language for XML - a RELAX NG schema specifies a pattern for the structure and content of an XML document. A RELAX NG schema is itself an XML document but RELAX NG also offers a popular compact, non-XML syntax. Although the RELAX NG specification was developed at roughly the same time as the W3C XML Schema specification, the latter was arguably better known and more widely implemented in both open-source and proprietary XML parsers and editors when it became a W3C Recommendation in 2001. Since then, however, RELAX NG support has increasingly found its way into XML software, and its acceptance has been aided by its adoption as a primary schema for popular document-centric markup languages such as DocBook, the TEI Guidelines, OpenDocument, and EPUB. This training helps you to use Relax NG for modelling your own schema documents and to understand the schema documents of the above-mentioned standards. It makes heavily use of hands-on labs and practical exercises alongside of presentations.



### Course Outline

#### A. Introduction

Introduction - Data model

## **B. Relax NG vocabulary**

Annotations - Whitespace - datatypeLibrary attribute - type attribute of value element - href attribute - externalRef element - include element - name attribute of element and attribute elements - ns attribute - QName - div element - Number of child elements - mixed element - optional element - zeroOrMore element - Constraints - combine attribute - grammar element - define and ref elements - notAllowed element - empty element

## **C. Semantics**

Name classes - Patterns: choice pattern, group pattern, empty pattern, text pattern, oneOrMore pattern, interleave pattern, element and attribute pattern, data and value pattern, Built-in datatype library, list pattern - Validity

## **D. Restrictions**

Restrictions: Contextual restrictions, attribute pattern, oneOrMore pattern, list pattern, except in data pattern, start element - String sequences - Restrictions on attributes - Restrictions on interleave





## (vii) XML Schema



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020972                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                               | New York                            |
|-------------------------------------|-------------------------------------|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD                        |
| 27-28 Aug<br>15-16 Oct<br>03-04 Dec | 03-04 Sep<br>22-23 Oct<br>17-18 Dec | 10-11 Sep<br>29-30 Oct<br>24-25 Dec |

Prices plus local taxes.



### Course Description

An XML schema is a description of a type of XML document, typically expressed in terms of constraints on the structure and content of documents of that type, above and beyond the basic syntactical constraints imposed by XML itself. These constraints are generally expressed using some combination of grammatical rules governing the order of elements, Boolean predicates that the content must satisfy, data types governing the content of elements and attributes, and more specialized rules such as uniqueness and referential integrity constraints. XML Schema, published as a W3C recommendation in May 2001, is one of several XML schema languages. By attending this training you will learn how to write complex XML Schema documents and how to make the most out of its syntax. You will learn how to define elements, attributes, define groups of elements and attributes as building blocks and reuse them multiple times in the document design. You will then get to know the data type system which is a standard of its own and to select suitable data types for elements and attributes - or to declare specifically derived new types. For complex documents, this training will show you how to define global complex types which may even be used for derivation (inheritance) and other more object-oriented techniques. The training finally shows how to bind Java and .NET classes to XML Schema structures or how to generate corresponding classes or XML Schema definitions.



### Course Outline

#### A. XML Schema - Fundamental Declarations

(0.5 Days) Schema-validity and documents - Overview of XSD - Element Declarations: Local and Global Elements - Attribute Declarations: Local and Global Attributes - Built-in Attribute Declarations - Attribute Uses

## **B. XML Schema Datatypes**

(0.125 Days) Built-in Primitive Datatypes - Simple Type Definitions - Definitions for List Types and Union Types - Type Derivation - Simple Type Restriction using Facets

## **C. Using Complex Types**

(0.5 Days) Complex Types with Simple Content - Complex Types with Complex Content - Locally Declared Types - Derivation Techniques: Extension and Restriction, Content Type Restrictions - Attributes and Complex Types - Model Groups - Attribute Groups - Substitution Groups

## **D. Keys and References in XML Schema**

(0.125 Days) Identity-constraint Definitions - DTD Data Types ID and IDREF/IDREFS - XML Schema Elements xs:Key, xs:Unique and xs:Keyref - XPath Selectors for Keys and References

## **E. Modularity in XML Schema**

(0.125 Days) Inclusion - Import - Redefinition

## **F. Namespaces**

(0.125 Days) Defining Namespaces in XML Schema - Using Namespaces in Import, Inclusion and Redefinition

## **G. XML Schema and object oriented Programming Languages**

(0.25 Days) Binding between XML Schema and Java-/ .NET Classes - Marshalling and Unmarshalling / Serialization and Deserialization of XML and Objects - Generating Classes and XML Schema and Generator Options

## **H. XML Schema and Databases**

(0.25 Days) Usage of XML Schema for Relational Mapping and Modeling - Usage Scenarios of XML Schema in Databases like MS SQL Server and Oracle for XML Storage and Validation



## (viii) XSL-FO



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020774                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XSLT basics                          |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami  | New York                            |
|-------------------------------------|--|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                                     | 1,400.00 USD                        |
| 10-11 Sep<br>29-30 Oct<br>17-18 Dec | 30-31 Jul<br>17-18 Sep<br>05-06 Nov<br>24-25 Dec | 27-28 Aug<br>15-16 Oct<br>03-04 Dec |

Prices plus local taxes.



### Course Description

XSL Formatting Objects, or XSL-FO, is a markup language for XML document formatting which is most often used to generate PDFs. XSL-FO is part of XSL (Extensible Stylesheet Language), a set of W3C technologies designed for the transformation and formatting of XML data. The general idea behind XSL-FO's use is that the user writes a document, not in FO, but in an XML language. Then, the user uses an existing XSLT stylesheet or creates one of his/her own which then transforms / converts the XML into XSL-FO. From there, an FO processor finally renders the FO-document in formats like PDF or PostScript and other output formats depending on the capabilities of the renderer. This training provides you with a substantial knowledge of the FO standard and shows you in many hands-on labs how to create an XSL-FO document so that a real-world XML file can be published as a complex book. You will learn how to define page dimensions and page templates, create paragraphs, blocks like tables and lists, insert images, and how to define a table of contents, and links. The last part of the training shows you how to build modular XSL-FO documents applying advanced techniques of XSLT and how to automatize the transformation process using variables, parameters or attribute groups.



### Course Outline

#### A. Page Templates and their Properties

(0.5 Days) Page Masters - Page Sequence Masters - Regions - Complex Pagination - Page Numbers and other Static Content

## **B. Text-/Block Formatting**

(0.25 Days) Font, Color, Text Decoration, and Size - Block Formatting: Padding, Indentation, Positioning, Space

## **C. Formatting Objects for Tables and Lists**

(0.125 Days) Tables: Simple and Complex Tables, Formatting of Tables using Border, Padding and Positioning - Lists: Simple and Numbered Lists, Complex Lists

## **D. Book Design**

(0.5 Days) Chapters and Sections - Page Breaks - Table of Contents - Running Headers - References and Links

## **E. Graphics**

(0.125 Days) Embedding of Images - Scaling and Positioning of Images

## **F. Complex Transformations and Modularization**

(0.5 Days) Attribute Groups, Variables and Temporary Trees for Modular Programming - XSLT Techniques for Text Formatting



## (ix) XSLT



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2020903                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 3 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                                   | Miami                               | New York                            |
|---|-------------------------------------|-------------------------------------|
| 1,900.00 USD                              | 1,800.00 USD                        | 1,900.00 USD                        |
| 10-12 Aug<br>05-07 Oct<br>30 Nov - 02 Dec | 17-19 Aug<br>12-14 Oct<br>07-09 Dec | 07-09 Sep<br>02-04 Nov<br>28-30 Dec |

Prices plus local taxes.



### Course Description

XSLT (Extensible Stylesheet Language Transformations) is a language for transforming XML documents into other XML documents,[1] or other objects such as HTML for web pages, plain text or into XSL Formatting Objects which can then be converted to PDF. The XSLT processor takes one or more XML source documents, plus one or more XSLT stylesheet modules, and processes them to produce an output document. The XSLT stylesheet contains a collection of template rules: instructions and other directives that guide the processor in the production of the output document. This training starts by presenting the basic concepts of XSLT and XML processing. It then covers the variety of XSLT processing options, conditional processing, variables and paramers as well as sorting, grouping and filtering XML contents with the aid of XPath expressions. You will learn how to generate output in (X)HTML, text, and also XML.



### Course Outline

#### A. XSLT Templates

(0.75 Days) Template Rules: Defining Templates, Defining Template Rules, Applying Template Rules, Conflict Resolution for Template Rules - Templates and Modes - Named Templates - Attribute Value Templates - Built-in Template Rules - Overriding Template Rules

#### B. XPath

(0.5 Days) Basic Concepts of XPath - Usage Patterns of XPath in XSLT - Localization and Filtering of Nodes - Axes - Predicates and Filters - Functions

## **C. Complex Processing Flows using XSLT and XPath**

(0.25 Days) Repetition: Conditional Processing with `xsl:if` and `xsl:choose` - Repetition with `xsl:for-each` - Control Structures in XPath

## **D. Numbering, Sorting and Grouping**

(0.5 Days) Numbering: Formatting a Supplied Number, Numbering based on Position in a Document, Number to String Conversion Attributes - Sorting: The `xsl:sort` Element, The Sorting Process, Comparing Sort Key Values, Processing a Sequence in Sorted Order - Grouping: The Current Group, The Current Grouping Key, The `xsl:for-each-group` Element

## **E. XML and Text Construction**

(0.5 Days) Literal Result Elements - Construction of XML: Creating Element Nodes Using `xsl:element`, Creating Attribute Nodes Using `xsl:attribute`, Creating Text Nodes, Processing Instructions, Namespace Nodes, Comments - Copying Nodes - Additional Features: Multiple Source Documents, Reading Text Files - Formatting Dates and Times - Number Formatting - Text Output for SQL and CSV

## **F. Inclusion and Import in XSLT Stylesheets**

(0.25 Days) Combining Stylesheet Modules: Locating Stylesheet Modules, Stylesheet Inclusion, Stylesheet Import - Embedded Stylesheet Modules - Conditional Element Inclusion

## **G. Parameters and Variables**

(0.25 Days) Variables - Parameters - Values of Variables and Parameters - Creating implicit document nodes - Global Variables and Parameters - Local Variables and Parameters - Scope of Variables - Passing Parameters to Templates - Tunnel Parameters



## (x) XSLT and XSL-FO Combined



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2021001                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 4 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                                   | Miami                               | New York                            |
|---|-------------------------------------|-------------------------------------|
| 1,950.00 USD                              | 1,800.00 USD                        | 1,950.00 USD                        |
| 31 Aug - 03 Sep<br>26-29 Oct<br>21-24 Dec | 24-27 Aug<br>19-22 Oct<br>14-17 Dec | 07-10 Sep<br>02-05 Nov<br>28-31 Dec |

Prices plus local taxes.



### Course Description

XSLT (Extensible Stylesheet Language Transformations) is a language for transforming XML documents into other XML documents, or other objects such as HTML for web pages or plain text. XSL Formatting Objects, or XSL-FO, is a markup language for XML document formatting which is most often used to generate PDFs. The XSLT stylesheet contains a collection of template rules: instructions and other directives that guide the processor in the production of the output document. The general idea behind XSL-FO's use is that the user writes a document, not in FO, but in an XML language. Then, the user uses an existing XSLT stylesheet or creates one of his/her own which then transforms / converts the XML into XSL-FO. From there, an FO processor finally renders the FO-document in formats like PDF. This training starts by presenting the basic concepts of XSLT and XML processing. It then covers the variety of XSLT processing options, conditional processing, variables and paramers as well as sorting, grouping and filtering XML contents with the aid of XPath expressions. You will learn how to generate output in (X)HTML, text, and also XML. The second part of the training provides you with a substantial knowledge of the FO standard and shows you in many hands-on labs how to create an XSL-FO document so that a real-world XML file can be published as a complex book.



### Course Outline

#### A. XSLT: XSLT Templates

(0.5 Days) Template Rules: Defining Templates, Defining Template Rules, Applying Template Rules, Conflict Resolution for Template Rules - Templates and Modes - Named Templates - Attribute Value Templates - Built-in Template Rules - Overriding Template Rules

## **B. XPath**

(0.125 Days) Basic Concepts of XPath - Usage Patterns of XPath in XSLT - Localization and Filtering of Nodes - Axes - Predicates and Filters - Functions

## **C. XSLT: Complex Processing Flows using XSLT and XPath**

(0.5 Days) Repetition: Conditional Processing with `xsl:if` and `xsl:choose` - Repetition with `xsl:for-each` - Control Structures in XPath - Parameters and Variables: Values of Variables and Parameters, Creating implicit document nodes, Global Variables and Parameters, Local Variables and Parameters

## **D. Numbering, Sorting and Grouping**

(0.25 Days) Numbering: Formatting a Supplied Number, Numbering based on Position in a Document, Number to String Conversion Attributes - Sorting: The `xsl:sort` Element, The Sorting Process, Comparing Sort Key Values, Processing a Sequence in Sorted Order - Grouping: The Current Group, The Current Grouping Key, The `xsl:for-each-group` Element

## **E. XML and Text Construction**

(0.5 Days) Literal Result Elements - Construction of XML: Creating Element Nodes Using `xsl:element`, Creating Attribute Nodes Using `xsl:attribute`, Creating Text Nodes, Processing Instructions, Namespace Nodes, Comments - Copying Nodes - Additional Features: Multiple Source Documents, Reading Text Files - Formatting Dates and Times - Number Formatting - Text Output for SQL and CSV

## **F. Inclusion and Import in XSLT Stylesheets**

(0.125 Days) Combining Stylesheet Modules: Locating Stylesheet Modules, Stylesheet Inclusion, Stylesheet Import - Embedded Stylesheet Modules - Conditional Element Inclusion

## **G. FO: Page Templates and their Properties**

(0.75 Days) Page Masters - Page Sequence Masters - Regions - Complex Pagination - Page Numbers and other Static Content

## **H. FO: Text-/Block Formatting**

(0.5 Days) Font, Color, Text Decoration, and Size - Block Formatting: Padding, Indentation, Positioning, Space - Tables: Simple and Complex Tables, Formatting of Tables using Border, Padding and Positioning - Lists: Simple and Numbered Lists, Complex Lists - Graphics: Embedding of Images - Scaling and Positioning of Images

## **I. FO: Book Design**

(0.75 Days) Chapters and Sections - Page Breaks - Table of Contents - Running Headers - References and Links - Complex Transformations and Modularization: Attribute Groups, Variables and Temporary Trees for Modular Programming - XSLT Techniques for Text Formatting



## A. oxygen



### (i) Relax NG using XML Developer



#### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2024731                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 2 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | XML basics                           |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



#### Course Dates

| Chicago                             | Miami                               | New York               |
|-------------------------------------|-------------------------------------|------------------------|
| 1,400.00 USD                        | 1,350.00 USD                        | 1,400.00 USD           |
| 06-07 Aug<br>01-02 Oct<br>26-27 Nov | 27-28 Aug<br>29-30 Oct<br>24-25 Dec | 17-18 Sep<br>12-13 Nov |

Prices plus local taxes.



#### Course Description

RELAX NG (REGular LAnguage for XML Next Generation) is a schema language for XML - a RELAX NG schema specifies a pattern for the structure and content of an XML document. A RELAX NG schema is itself an XML document but RELAX NG also offers a popular compact, non-XML syntax. Although the RELAX NG specification was developed at roughly the same time as the W3C XML Schema specification, the latter was arguably better known and more widely implemented in both open-source and proprietary XML parsers and editors when it became a W3C Recommendation in 2001. Since then, however, RELAX NG support has increasingly found its way into XML software, and its acceptance has been aided by its adoption as a primary schema for popular document-centric markup languages such as DocBook, the TEI Guidelines, OpenDocument, and EPUB. This training helps you to use Relax NG for modelling your own schema documents and to understand the schema documents of the above-mentioned standards. It makes heavily use of hands-on labs and practical exercises alongside of presentations.



#### Course Outline

### A. Introduction

Introduction - Data model

## **B. Relax NG vocabulary**

Annotations - Whitespace - datatypeLibrary attribute - type attribute of value element - href attribute - externalRef element - include element - name attribute of element and attribute elements - ns attribute - QName - div element - Number of child elements - mixed element - optional element - zeroOrMore element - Constraints - combine attribute - grammar element - define and ref elements - notAllowed element - empty element

## **C. Semantics**

Name classes - Patterns: choice pattern, group pattern, empty pattern, text pattern, oneOrMore pattern, interleave pattern, element and attribute pattern, data and value pattern, Built-in datatype library, list pattern - Validity

## **D. Restrictions**

Restrictions: Contextual restrictions, attribute pattern, oneOrMore pattern, list pattern, except in data pattern, start element - String sequences - Restrictions on attributes - Restrictions on interleave



## (ii) XML Fundamentals (Long) using XML Developer



### Overview

|                      |                                      |
|----------------------|--------------------------------------|
| <b>Course ID</b>     | 2024734                              |
| <b>Language</b>      | en                                   |
| <b>Duration</b>      | 5 Days                               |
| <b>Delivery mode</b> | Classroom                            |
| <b>Course Type</b>   |                                      |
| <b>Target Group</b>  | Programmers, Web developers          |
| <b>Prerequisites</b> | no                                   |
| <b>Method</b>        | Lecture with examples and exercises. |
| <b>Course level</b>  | Beginning                            |



### Course Dates

| Chicago                             | Miami                                     | New York                                  |
|-------------------------------------|---|---|
| 2,550.00 USD                        | 2,350.00 USD                              | 2,550.00 USD                              |
| 07-11 Sep<br>02-06 Nov<br>21-25 Dec | 31 Aug - 04 Sep<br>26-30 Oct<br>14-18 Dec | 24-28 Aug<br>19-23 Oct<br>28 Dec - 01 Jan |

Prices plus local taxes.



### Course Description

Extensible Markup Language (XML) is a simple, very flexible text format designed to meet the challenges of large-scale electronic publishing but also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere. It is defined in the XML 1.0 Specification produced by the W3C, and several other related specifications, all gratis open standards. Many application programming interfaces (APIs) have been developed to aid software developers with processing XML data, and several schema systems exist to aid in the definition of XML-based languages. As of 2009, hundreds of document formats using XML syntax have been developed - both for technical usage scenarios as well as for data exchange between companies. This training provides an overview of the big family of XML technologies incl. hands-on labs, various examples, and case studies.



### Course Outline

#### A. XML Fundamentals and DTD

(0.75 Days) Well-Formed XML Documents - Common Syntactic Constructs - Character Data and Markup - Comments - Processing Instructions - CDATA Sections - Prolog and Document Type Declaration- Start-Tags, End-Tags, and Empty-Element Tags - DTD Fundamentals: Declaration of Elements and Attributes, Attribute-List, Conditional Sections, Mixed Content

## **B. Document Modeling using XML Schema**

(1.25 Days) Principles of Document Modeling - Defining Elements, Attributes and Groups - Complex Documents using Global Complex Types and Derivation - Datatypes: Pre-defined XML Schema Datatypes, User-defined Datatypes - Modular XML Schema Documents using Inclusion, Import and Redefinition - Namespaces

## **C. Localization, Navigation and Filtering using XPath**

(0.25 Days) Axes and Node Tests - Location Paths - Predicates and Filters - Functions

## **D. Transformations using XSLT**

(1.5 Days) Principles of XSLT - Template: Rules and Patterns, Named Templates, Modes - Control structures: Conditional Processing and Repetition - Sorting, Grouping and Numbering - Modular Stylesheets using Inclusion and Import - Variables and Parameters - Output of HTML, XML, and Text

## **E. XML Standards for Web Services**

(0.25 Days) WSDL: Service Definition, Types, Messages and Message Parts, Port Types, Bindings, Ports, Services - SOAP: Message Structure (Envelope, Header, Body), SOAP Processing Model and Attributes, Fault Message

## **F. XML and Relational Databases**

(0.5 Days) Export from Relational Data into XML using SQL - Decomposition of XML into Relational Data - Storing of XML in Relational DBs - Processing, Filtering and Querying of XML - Comparison: Oracle, MS SQL Server, IBM DB2

## **G. Querying XML using XQuery**

(0.5 Days) FLWOR Expressions: For and Let Clauses, Where Clause, Order By and Return Clauses - Constructors: Direct Element Constructors and Computed Constructors for Elements, Attributes and Other Nodes - Conditional Expressions



## (iii) XML Fundamentals (Short) using XML Developer



### Overview

|                      |                             |
|----------------------|-----------------------------|
| <b>Course ID</b>     | 2024733                     |
| <b>Language</b>      | en                          |
| <b>Duration</b>      | 2 Days                      |
| <b>Delivery mode</b> | Classroom                   |
| <b>Course Type</b>   |                             |
| <b>Target Group</b>  | Programmers, Web developers |
| <b>Prerequisites</b> | no                          |
| <b>Method</b>        | Lecture and discussion      |
| <b>Course level</b>  | Beginning                   |



### Course Dates

| Chicago                             | Miami                                     | New York                            |
|-------------------------------------|---|-------------------------------------|
| 1,400.00 USD                        | 1,350.00 USD                              | 1,400.00 USD                        |
| 03-04 Sep<br>29-30 Oct<br>24-25 Dec | 10-11 Sep<br>05-06 Nov<br>31 Dec - 01 Jan | 27-28 Aug<br>22-23 Oct<br>10-11 Dec |

Prices plus local taxes.



### Course Description

Extensible Markup Language (XML) is a simple, very flexible text format designed to meet the challenges of large-scale electronic publishing but also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere. It is defined in the XML 1.0 Specification produced by the W3C, and several other related specifications, all gratis open standards. Many application programming interfaces (APIs) have been developed to aid software developers with processing XML data, and several schema systems exist to aid in the definition of XML-based languages. As of 2009, hundreds of document formats using XML syntax have been developed - both for technical usage scenarios as well as for data exchange between companies. This training provides an overview of the big family of XML technologies. Hands-on labs can be found in our other trainings presenting the same topics in more days and in greater depth. This training, however, makes use of presentations and prepared examples and case studies.



### Course Outline

#### A. XML Fundamentals and DTD

(0.25 Days) Well-Formed XML Documents - Common Syntactic Constructs - Character Data and Markup - Comments - Processing Instructions - CDATA Sections - Prolog and Document Type Declaration- Start-Tags, End-Tags, and Empty-Element Tags - DTD Fundamentals: Declaration of Elements and Attributes, Attribute-List, Conditional Sections, Mixed Content

## **B. Document Modeling using XML Schema**

(0.25 Days) Principles of Document Modeling - Defining Elements, Attributes and Groups - Complex Documents using Global Complex Types and Derivation - Datatypes: Pre-defined XML Schema Datatypes, User-defined Datatypes - Modular XML Schema Documents using Inclusion, Import and Redefinition - Namespaces

## **C. Localization, Navigation and Filtering using XPath**

(0.125 Days) Axes and Node Tests - Location Paths - Predicates and Filters - Functions

## **D. Transformations using XSLT**

(0.25 Days) Principles of XSLT - Template: Rules and Patterns, Named Templates, Modes - Control structures: Conditional Processing and Repetition - Sorting, Grouping and Numbering - Modular Stylesheets using Inclusion and Import - Variables and Parameters - Output of HTML, XML, and Text

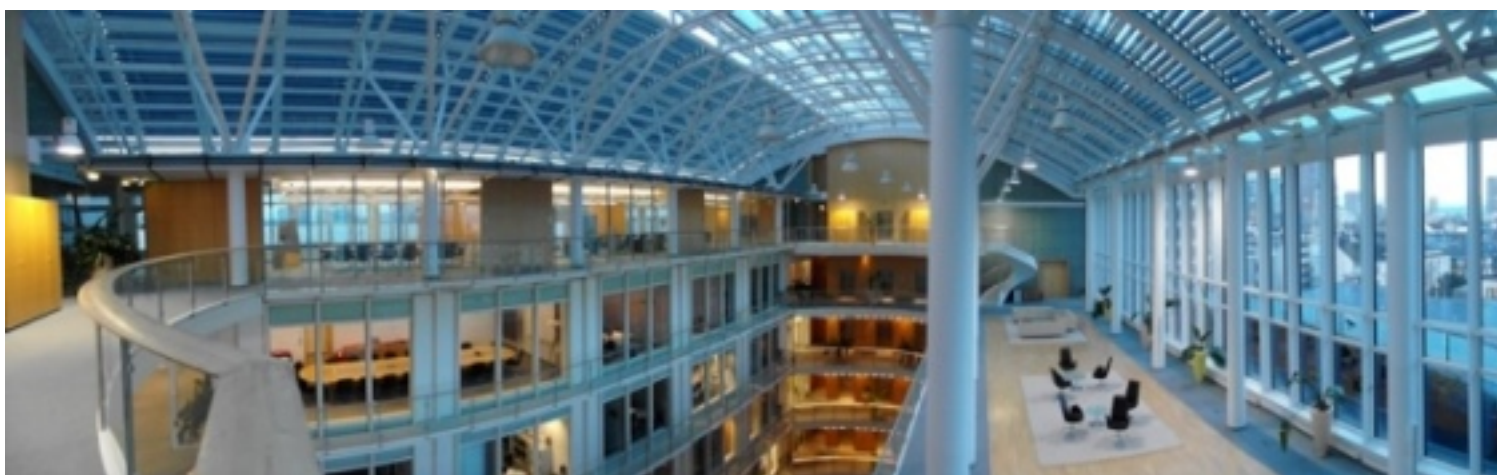
## **E. XML Standards for Web Services**

(0.125 Days) WSDL: Service Definition, Types, Messages and Message Parts, Port Types, Bindings, Ports, Services - SOAP: Message Structure (Envelope, Header, Body), SOAP Processing Model and Attributes, Fault Message

## **F. XML and Relational Databases**

(0.125 Days) Export from Relational Data into XML using SQL - Decomposition of XML into Relational Data - Storing of XML in Relational DBs - Processing, Filtering and Querying of XML - Comparison: Oracle, MS SQL Server, IBM DB2

## b. Disclaimer



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