

# Course : .NET, developing with Design Patterns and Frameworks

Practical course - 5d - 35h00 - Ref. TAA

Price : 2610 € E.T.

 4,6 / 5

Nouvelle édition

Design robust, maintainable enterprise applications using the most proven software engineering Design Patterns. Get to grips with the various frameworks in the .NET ecosystem and draw on their resources/classes to speed up your developments, make them more reliable and standardize them.

## Teaching objectives

At the end of the training, the participant will be able to:

- Control dependency injection and the object lifecycle
- Implementing the command pattern in a CQRS architecture
- Control data access and transaction application
- REST API and GUI development with AspNet Core

## Intended audience

This course is aimed at developers.

## Prerequisites

Good knowledge of C# programming and the .NET framework. Experience in .NET application development required.

## Practical details

A "red thread" exercise will be run, with each step validated by unit tests.

## Course schedule

### PARTICIPANTS

This course is aimed at developers.

### PREREQUISITES

Good knowledge of C# programming and the .NET framework. Experience in .NET application development required.

### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more. Participants also complete a placement test before and after the course to measure the skills they've developed.

## 1 Enterprise application development issues

- Objectives: productivity, scalability, upgradability, testability.
- Separation of responsibilities.
- The monolithic application.
- Microservice architecture.

### Hands-on work

Get to grips with the development environment (Visual Studio).

## 2 Introduction to the .NET ecosystem

- Several languages: C#, VB.NET, F#.
- The emergence of .NET Core, the unification of .NET and .NET Framework since .NET 5.
- Frameworks: DependencyInjection, EntityFramework, ASP.NET, etc.

### Hands-on work

Get to grips with the development environment.

## 3 Good design practices and design patterns

- Separation of responsibilities with facade.
- Dependency injection with strategy.
- Proxy interception.
- Component lifecycle management with singleton and prototype.
- Instantiate application components with factory.
- Implement a message-oriented architecture with command and observer.

### Hands-on work

Implement these patterns with Microsoft.Extensions.DependencyInjection.

## 4 Data access and transactions

- Introduction to different types of database (SQL, NoSQL).
- ACID principles and transaction management.
- The pattern unit of work.
- Persistence frameworks (EntityFrameworkCore, NHibernate). mini-ORM (Dapper): advantages/disadvantages Best practices.

### Hands-on work

Access relational database data from a C# application, apply transactions.

## 5 REST API with AspNet Core

- REST API design principles (URI, mediatype, HATEOAS).
- HTTP protocol basics.
- Building REST APIs with ASP.NET MVC.
- Security: token authentication with OpenID Connect.

### Hands-on work

Development of a REST API to expose the previously developed application.

## TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

## TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

## ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

## 6 HMI with AspNet Core

- Reminder of the MVC pattern.
- Razor views: model access, internationalization, exception handling.
- Form authentication, secure routes and views, protection against CSRF attacks.

### Hands-on work

Development of a GUI to display the previously developed application.

## 7 Development industrialization

- Continuous integration.
- Delivery continues.
- Creating an OCI image with Docker.
- Deployment on the Kubernetes orchestrator.

### Hands-on work

Creation of a Docker image and study of Kubernetes deployment descriptors.

## Dates and locations

### REMOTE CLASS

2026: 9 Mar., 1 June, 12 Oct.

### PARIS LA DÉFENSE

2026: 9 Mar., 1 June, 12 Oct.