

# Course : Angular - Advanced development

*Practical course - 3d - 21h00 - Ref. AJA*

*Price : 2150 CHF E.T.*

NEW

On completion of the course, participants will be able to use Angular's advanced features to develop scalable web applications. This training program is intended for employees of professional branches covered by the OPCO Atlas.



## Teaching objectives

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

- ✓ Learn about Angular's architecture and advanced features
- ✓ Master the main principles of reactive programming
- ✓ Developing a dynamic, high-performance web application
- ✓ Performing unit tests

## Intended audience

For OPCO Atlas members: architects, developers, project managers.

## Prerequisites

Good knowledge of Angular, web technologies and front-end development tools.

## Practical details

### Hands-on work

Practical exercises and/or case studies.

### Teaching methods

70% practical - 30% theory. To optimize the learning experience, e-learning modules can be provided before and after the classroom session or virtual class, at the participant's request.

## Course schedule

### PARTICIPANTS

For OPCO Atlas members:

architects, developers, project managers.

### PREREQUISITES

Good knowledge of Angular, web technologies and front-end development tools.

### 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 TypeScript - Getting to grips with the language for web application development - Pre-training digital learning content

- Introduction.
- Installation.
- Language basics.
- Object-oriented programming (OOP).
- Modules and definition file.

### Digital activities

This 1 hour 49 minute training video introduces the TypeScript language and teaches how to use it to develop more robust and secure web applications. After an introduction to its evolution and environment (Visual Studio Code, Node.js, CLI), participants will study the basics of the language, object-oriented programming and the module system. At the end of the course, they will be ready to use TypeScript with frameworks such as Angular, React, Vue or Node.js.

## 2 A reminder of how Angular works

- Introduction to cli Nx: installation, project creation, workspace management.
- Component-level Lazy Loading.
- Data binding, manual mode: ChangeDetectorRef, advanced change detection.

### Hands-on work

Installation et configuration de l'environnement. Architecture et Lazy Loading. Optimisation des performances.

## 3 Advanced architecture

- Advanced design patterns for Angular.
- Component-oriented architecture and micro-frontends.
- Advanced state management with different approaches.
- Performance optimization strategies.

### Hands-on work

Workshop sur les patterns architecturaux. Gestion d'état avancée. Optimisation des performances.

## 4 Reactive programming with RxJS

- RxJS fundamentals and key concepts.
- Advanced operators and their use cases.
- Subscription management strategies.
- Current and emerging reactive patterns.
- Select and use RxJS appropriately.
- Advanced observables and design patterns.
- Advanced data flow management.
- Performance optimization with RxJS.

### Hands-on work

Exploration des observables. Implémentation de patterns réactifs. Cas d'usage avancés.

### 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.

## 5 Testing and optimization

- Advanced unit testing with Jasmine.
- Integration testing with TestBed.
- Performance optimization techniques.
- Optimized deployment strategies.

### Hands-on work

Tests unitaires avancés. Optimisation des performances. Déploiement optimisé.

## 6 Angular's inner workings

- ZoneJS: concept and fundamentals.
- Asynchronous execution context management.
- Strategies for optimizing rendering cycles.
- Performance patterns with and without Zone.
- Component life cycles and their impact.

### Hands-on work

Exploration de ZoneJS. Optimisation des cycles de rendu. Patterns et cycles de vie.

## 7 Safety and Route Guards

- Route Guards architecture.
- Implementation of different types of guards.
- Pre-fetching and lazy loading strategies.
- Advanced road safety.

### Hands-on work

Implémentation des guards. Configuration du pre-fetching. Cas pratiques de sécurisation.

## 8 Advanced optimization

- Advanced optimization techniques.
- Monitoring and profiling tools.
- Debugging strategies.

### Hands-on work

Audit et optimisation. Monitoring des performances. Débogage avancé.

## 9 Signal API

- Introducing the Signals API and its ecosystem.
- Fundamental concepts and operating principles.
- Comparison with other reactive approaches.
- Advanced signal usage patterns.

### Hands-on work

Introduction aux signaux. Implémentation pratique. Analyse de cas d'usage.

## 10 Signal implementation

- Create and manage complex signals.
- Advanced usage patterns.
- Migration strategies.
- Optimization and best practices.

### Hands-on work

Signaux avancés. Migration vers les signaux. Revue technique.

## 11 Integration and case studies

- Integration with RxJS and hybrid patterns.
- Advanced status management with signals.
- Intercomponent communication strategies.
- Performance optimization.

### Hands-on work

Intégration RxJS et Signaux. Développement de features. Optimisation des performances.

## 12 Angular 16 - Developing dynamic and interactive applications - Post-training digital learning content

- Initiating a web application project with Angular.
- Getting to grips with Angular.
- Data management via services.

### Digital activities

This 1h34 training video teaches how to use Angular 16 to develop dynamic and interactive web applications. After an introduction to the development of Single Page Applications and the use of the Angular command line, participants will create a threaded project to master components, the display of dynamic data and the structuring of code with services. They will also discover how to use RxJs to manage asynchronous data flows and adopt Angular development best practices.

## Dates and locations

### REMOTE CLASS

2026 : 10 Mar., 2 June, 15 Sep., 24 Nov.