

# Course : Developing Full JavaScript Web applications

*Practical course - 4d - 28h00 - Ref. FUJ*

**Price : 2200 € E.T.**



You will learn how to develop multi-page or single-page Web applications in JavaScript. The frameworks used will be Angular for the client side and Node.js for the server side. NoSQL databases will be covered, with MongoDB and other useful frameworks such as Express JS.

## Teaching objectives

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

- ✓ Master the concepts of asynchronous, functional and reactive Javascript programming.
- ✓ Develop a SPA client application with Angular and Material Design.
- ✓ Develop a server application and REST API in Javascript with Node, Express.
- ✓ Add a data persistence layer using a NoSQL approach with MongoDB.
- ✓ Deploy a Full Javascript application in production using Docker.

## Intended audience

Developers and project managers.

## Prerequisites

Good knowledge of the fundamentals of the JavaScript language (in particular the notion of callback) as well as strong notions of HTML and CSS.

## Practical details

### Exercise

A "red thread" application will be built, gradually enriching it with the concepts covered.

### Teaching methods

A "red thread" application will be built, gradually enriching it with the concepts covered.

## Course schedule

### PARTICIPANTS

Developers and project managers.

### PREREQUISITES

Good knowledge of the fundamentals of the JavaScript language (in particular the notion of callback) as well as strong notions of HTML and CSS.

### 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 A reminder of the basics

- Prototype, hoisting, ES5/6, binding, get/set.
- Asynchronous programming: event loop, blocking call, promise, async-await.
- GUI primitives (DOM access, event management, ajax).
- Reactive programming: observable, subject, behaviorSubject (RxJS).
- Typescript: typed and modular programming. Decorators. Generics.

### Hands-on work

Web application that displays the contents of a BehaviorSubject in real time (e.g. stopwatch).

## 2 Node.js

- Commands: Node, npm, npx.
- Files: package.json, node\_modules, etc.
- Global and local modules, semver versions.
- Asynchronous Node PLC contract.
- Practical tools: Nodemon, ts-node, webpack.

### Hands-on work

Installation d'un environnement de développement. Construction d'un site http « hello-world » en JS, sans express.

## 3 ExpressJS

- RequestListener, Middleware, Middleware chaining.
- Building an application skeleton.
- Express and application configuration.
- Rendering views with EJS.
- Setting up a REST API: CRUD on http.
- Implementation of an express server in Typescript.

### Hands-on work

Creation of an express server with EJS templates and a basic JSON web service API, and a REST API.

## 4 Angular

- Digestion, interest in observables, behaviorSubject.
- Responsive routes and forms.
- http requests.
- Using off-the-shelf layouts and widgets: Angular Material.
- Construction of the production deliverable.
- Starting a project with Angular cli.
- Artifact presentation.
- Databinding concept.

### Hands-on work

Creation of an Angular SPA client using Angular Material to perform a CRUD on a resource.

### 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 MongoDB

- Mongo installation, normal and via docker.
- Installation of Mongo compass (intuitive client).
- Exploring Mongo concepts: collections, documents, etc.
- CRUD on Mongo from Node.
- REST API with Middleware express exposing a Mongo collection.

### Hands-on work

Add a complete persistence layer to the previous application.

## 6 Full JavaScript application deployment

- Deployed application architecture: reverse proxy, HTTPS, load balancer.
- List of the main deployment methods: Docker/Kubernetes, PM2, BaaS (Netlify, Firebase, etc.).
- Making a Full Javascript application deployable: using environment variables. dotenv library.
- PM2 production management tools.
- PM2 ecosystem file: ecosystem.config.js.

### Hands-on work

Use PM2 to start the previous application in production mode.