

# Node.JS Advanced Training

3 days (21 hours)

## Presentation

This Node.js Advanced course is designed for experienced JavaScript developers who wish to perfect their knowledge of Node.

Node is a ubiquitous technology on the modern web and an essential part of every web developer's toolbox. With the high demand for [Node.js](#) developers on the job market, it's essential to master all the advanced techniques of Node.js.

In this course, you'll learn about the asynchronous paradigm, functional testing, performance management and advanced Node flow management, as well as advanced modules such as Async hooks, Buffer, Stream.

At the end of our training course, you'll have the advanced skills you need to become an expert on NodeJS, and so be able to put your skills to good use.

As with all our training courses, we'll be using the latest LTS version of [Node.js v23](#).

## Objectives

- Knowledge of the inner workings of Nodejs
- Monitor and debug a Node application
- Know and apply good safety practices
- Master testing, streaming and continuous integration
- Improve application performance with Redis and Express

## Target audience

Web developers

## Prerequisites

- Knowledge of JavaScript and a client-side framework
- Knowledge of a typed language
- Basic knowledge of Node or have attended our [Nodejs training course](#)

## Technical requirements

- An IDE such as VSCode, Atom, IntelliJ IDEA or WebStorm
- Node.js LTS (18.12.0) or Current (20.7.0)
- A DB Mongo
- Admin access to your environment

## Node.JS Advanced training program

### JS advanced level

- Tame the asynchronous paradigm
- Its advantages and pitfalls to avoid
- Concept and use of promises/ Async await
- The future with ES-Next (ES6)
- Synchronous code
- Based on callbacks and promise
- Framework Express (Routing, Guard, Security via authentication strategies)
- Writable / Readable / Duplex / Transform streams

### Testing with NodeJS

- Functional testing with headless browsers
- Isolate tests
- Asynchronous testing and Mocks / Stubs
- Framework Mocha & Jest

### Performance management

- High-performance JavaScript for V8
- Memory management and leaks
- Heavy calculations
- Clusters
- Advanced profiling and performance
- Performance bottlenecks in Node
- Single-threaded and event-loop distributed
- Node events

### Advanced Node flow management

- Back-pressure
- AMQP in Node JS
- Pub/sub with Redis
- Real-time inter-process communication

## Quality control

- Debugger v8 / external
- Profiling
- Code quality control
- Error handling in Node

## Advanced modules

- Asynchronous context tracking
- Async hooks
- Child process
- Clusters
- Debugger
- Errors
- Events (RxJS)
- Worker threads
- Web Streams API
- Process events
- File system
- Buffer
- Stream
- Performance measurement APIs
- Crypto
- TLS (SSL)
- Web Crypto API
- C++ - addons / Node API / embedder API

## Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

## Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

## Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

## Organization

The course alternates theoretical input from the trainer, supported by examples, brainstorming sessions and group work.

## Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

## Sanction

A certificate will be issued to each trainee who completes the course.