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Call: 434-509-5680 or Email: [sales@cloudcontraptions.com](mailto:sales@cloudcontraptions.com)

## **Node.js for Professionals: Building Reliable Back-End Services with Express, npm, and SQLite**

### **Class Duration**

21 hours of live training delivered over 3-5 days to accommodate your scheduling needs

### **Student Prerequisites**

- Good understanding of programming concepts including asynchronous programming
- Experience with JavaScript programming

### **Target Audience**

This course is for professional software engineers, tech leads, and solutions architects who build or maintain back-end services and internal tools. Teams adopting Node.js for API development, data processing, or integration work will benefit from its pragmatic focus on performance, reliability, and maintainability. Managers and L&D leaders seeking faster delivery, cleaner deployments, and reduced support costs will find the curriculum aligned to business outcomes and modern engineering practices.

### **Description**

This live, hands-on course equips professional developers to build production-ready back-end services with Node.js. You will master the Node runtime (modules, globals, and the event loop), write and execute scripts, manage dependencies with npm and semantic versioning, and work safely with Git and VS Code. Through practical labs you'll handle files, streams, buffers, and promises; stand up HTTP servers; design REST APIs with Express and middleware; and persist data with SQLite using migrations and CRUD patterns. By the end, you'll ship maintainable, testable services that improve delivery speed and reduce operational risk.

### **Learning Outcomes**

- Set up a modern Node.js development environment with Git, VS Code, and project markdown conventions.



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- Execute JavaScript with Node, applying classes and arrow functions effectively in server code.
- Use CommonJS modules (static and dynamic) and Node globals to structure reusable components.
- Explain and apply the Node event loop and EventEmitter to write non-blocking, observable services.
- Manage dependencies with npm: semver, package.json, local vs global installs, and lifecycle scripts.
- Work with the filesystem using fs, paths, streams, pipes, chaining, buffers, and promises for robust I/O.
- Create and migrate SQLite databases; implement CRUD operations from Node applications.
- Build HTTP services and RESTful APIs using native http and Express, routes, parameters, 404s, errors, and custom middleware; speed development with nodemon.

## Training Materials

All students receive comprehensive courseware covering all topics in the course. Courseware is distributed via GitHub in the form of documentation and extensive code samples. Students practice the topics covered through challenging hands-on lab exercises.

## Software Requirements

Students will need a free, personal GitHub account to access the courseware. No local student setup is required, this course is delivered with GitHub Codespaces. The free allotment of Codespaces hours from GitHub is sufficient to complete the course.

## Training Topics

### Getting Started

- What is Node.js?
- Node Development Environment Setup
- Basics of Git
- Overview of Visual Studio Code (VS Code)
- How markdown files are used in projects
- Committing code in your own branch



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## Executing Scripts with Node

- Installing and updating Node
- Ways to execute JavaScript using Node
- Review Classes
- Review Arrow Functions

## Modules & Globals

- What are modules?
- Static Modules
- Dynamic Modules
- CommonJS Modules

## Event loop

- Using the event loop
- How to require core modules
- Understanding the Event Loop
- Using the Event Emitter

## Using the Node Package Manager (npm)

- Background of NPM and its usage
- The meaning and usage of packages
- Understanding how to use semver
- Creating and using package.json files
- Installing, Listing, Uninstalling and Updating Modules
- Global vs. local package installation
- When to use -save and -save-dev

## Working with the filesystem and Promises

- Require-ing core file modules
- Relative path information
- Using the fs module to:
- Open, read, write files
- View and create directories
- Working with Promises
- Working with Streams
- Writing and Reading from Stream Resources
- Piping and Chaining Streams
- Using buffers for binary data



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### Database Access with Node

- Working with the SQLite database
- Creating a database and tables with Node
- Database CRUD with Node
- Creating a migration for managing database changes

### Creating a Simple HTTP Server to receive requests

- Reviewing the HTTP protocol
- Discussing HTTP Request methods
- Reviewing Response Codes
- Creating a HTTP basic server
- Installing and using nodemon for faster development

### Getting Started with the Express Module

- Overview of Express
- Using Express to create a server
- What is Middleware?
- Creating routes for GET, POST, PUT, PATCH, DELETE
- Creating a 404 route and handing other errors
- Path parameters
- Creating a REST API
- Create custom middleware