

# Node.js Zero to Hero: Complete Learning Path

## Table of Contents (Based on 2 Hours Per Day Study Plan)

### Week 1: Introduction & Core Concepts

#### Day 1-2: Introduction to Node.js (4 hrs)

- What is Node.js?
- Why use Node.js?
- Installing Node.js & npm
- Running your first Node.js script

#### Day 3-5: Understanding Node.js Core Concepts (6 hrs)

- Node.js Architecture
- Event Loop, Callbacks & Promises
- Asynchronous Programming (setTimeout, setInterval, process.nextTick)
- Working with fs, path, os, and events modules

#### Day 6-7: Node.js Package Management (4 hrs)

- Understanding npm & yarn
- Installing, updating, and removing packages
- Using package.json and package-lock.json
- Creating your own npm package

### Week 2: CLI, Express.js & Database

#### Day 8-9: Building a Simple CLI Tool (4 hrs)

- Reading/Writing Files
- Taking User Input
- Making HTTP Requests

#### Day 10-13: Working with Express.js (8 hrs)

- Setting up an Express server

<ul style="list-style-type: none"> <li>• Middleware &amp; Routing</li> </ul>
<ul style="list-style-type: none"> <li>• Handling Requests &amp; Responses</li> </ul>
<ul style="list-style-type: none"> <li>• Serving Static Files</li> </ul>
<b>Day 14: Database Basics (2 hrs)</b>
<ul style="list-style-type: none"> <li>• Introduction to MongoDB &amp; MySQL</li> </ul>
<b>Week 3: Database, Authentication &amp; Security</b>
<b>Day 15-18: Database Integration (8 hrs)</b>
<ul style="list-style-type: none"> <li>• Connecting Node.js with MongoDB</li> </ul>
<ul style="list-style-type: none"> <li>• CRUD Operations with Mongoose</li> </ul>
<ul style="list-style-type: none"> <li>• Using MySQL with Node.js</li> </ul>
<b>Day 19-22: Authentication &amp; Security (8 hrs)</b>
<ul style="list-style-type: none"> <li>• JWT Authentication</li> </ul>
<ul style="list-style-type: none"> <li>• Password Hashing (bcrypt)</li> </ul>
<ul style="list-style-type: none"> <li>• OAuth &amp; Social Logins</li> </ul>
<ul style="list-style-type: none"> <li>• Securing API Routes</li> </ul>
<b>Week 4: Real-time Apps, Deployment &amp; Advanced Topics</b>
<b>Day 23-24: Real-time Applications (4 hrs)</b>
<ul style="list-style-type: none"> <li>• WebSockets with <code>socket.io</code></li> </ul>
<ul style="list-style-type: none"> <li>• Building a Real-time Chat App</li> </ul>
<ul style="list-style-type: none"> <li>• Streaming Data with Node.js</li> </ul>
<b>Day 25-26: Deployment &amp; Performance Optimization (4 hrs)</b>
<ul style="list-style-type: none"> <li>• Environment Variables with <code>dotenv</code></li> </ul>
<ul style="list-style-type: none"> <li>• Deploying to Heroku/Vercel</li> </ul>
<ul style="list-style-type: none"> <li>• Load Balancing &amp; Caching</li> </ul>
<ul style="list-style-type: none"> <li>• Using PM2 for Process Management</li> </ul>
<b>Day 27-30: Advanced Topics (8 hrs)</b>

<ul style="list-style-type: none"> <li>• Microservices with Node.js</li> </ul>
<ul style="list-style-type: none"> <li>• GraphQL with Node.js</li> </ul>
<ul style="list-style-type: none"> <li>• Building RESTful &amp; GraphQL APIs</li> </ul>
<ul style="list-style-type: none"> <li>• Testing with Jest &amp; Mocha</li> </ul>
<b>Total Time Required</b>
⌚ <b>40-60 hours</b> (Approx. <b>2 hours per day for 30 days</b> ) to go from <b>zero to hero</b> in Node.js.