# Build Your REST API with Spring﻿﻿﻿﻿﻿﻿

from HTTP fundamentals to API Mastery

**The Basics of REST with Spring**

1. The Anatomy of a REST API
2. Bootstrap a New Project
3. The User Management Project: A Full API
4. Application Startup: Executable Jar,  
   Tomcat Deployment and Cargo
5. Properties and Project Settings
6. The Web Configuration

**REST and HTTP Semantics​**

1. Exception Handling Good Practices and Sane HTTP Status Codes
2. The Basics of Input Validation
3. Good URI Practices (Nouns vs Verbs, Plural vs Singular, Identifiers vs UUID)
4. Leverage HTTP Verbs and Semantics
5. Content Negotiation: Support both XML and JSON ([Preview lesson](https://www.youtube.com/watch?v=6yF0GpjAhwk))
6. The Lifecycle of a Request

**Simple Security for REST​**

1. Simple Spring Security for the API
2. Global URL vs Method Level Authorization
3. Understanding Cookies and the Session
4. Certificates and HTTPS for Tomcat
5. The Topology of Roles and Privileges

**Consuming the API from AngularJS**

1. Basic Ways to Consume REST from AngularJS
2. Dealing with CORS and Advanced CORS Scenarios (2 parts)
3. Working with OAuth2 and Tokens (JWT) from the front-end

**Testing the API​**

1. The First Live API Tests - Introducing rest-assured (2 parts)
2. How To Build a Client for the API (2 parts)
3. How to test HTTP semantics
4. A Good Base API Tests for Any Resource
5. Contract Testing - A Special Kind Of Test

**Advanced API Security: OAuth2 & JWT**

1. How OAuth2 Works for REST (2 parts)
2. Set Up OAuth2 with Spring Security (2 parts)
3. Tokens, OAuth2 and JWT ([Preview lesson](https://www.youtube.com/watch?v=b_QdSemDKoU))
4. Refreshing a token
5. How To Do OAuth from the Front End

**Document, Discover and Evolve the REST API**

1. Document the API with Swagger ([Preview lesson](https://www.youtube.com/watch?v=KX0o1UFyclw))
2. The Basics of HATEOAS
3. Advanced Scenarios with Spring HATEOAS
4. How To Evolve the API - without Breaking Clients
5. Versioning — The Last Resort (Bonus)

**Monitoring and API Metrics**

1. Fundamentals of Monitoring with Boot ([Preview lesson](https://www.youtube.com/watch?v=71UFLAVXgq0))
2. Custom Metrics with the Dropwizard Metrics library
3. Monitoring Data over JMX
4. Displaying Metrics over HTTP
5. Production Grade Tools for Monitoring

**DevOps: CI and CD Pipelines, Deployment**

1. Setting Up Jenkins and The First Job
2. A Simple Jenkins Pipeline From Scratch
3. Remote Deployment for the API
4. From Continuous Integration to Continuous Deployment
5. Load Balance the REST API on EC2

**Advanced API Tactics**

1. ETags in REST
2. A Simple API Rate Limiting Implementation
3. Binary Data Formats in a Spring REST API
4. REST, Async and Long Running Requsts

**A Reactive REST API (upcoming)**

1. Moving Past the Servlet - going Reactive
2. How to Build a Reactive REST API
3. Understanding the new WebClient

**New in Spring 5 (upcoming)**

1. Using the New Bean Validation 2.0
2. Using Kotlin to Build the API
3. Java 8 APIs - First Class in Spring 5
4. New Indexing Alternative to Classpath Scanning

**"New in Spring MVC" (upcoming)**

1. The Extended Syntax of the *ParsingPathMatcher*
2. What's Possible with the *ResponseStatusException*
3. JSON Binding API, the Jackson alternative