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| **No** | **Topic** | **Objective** | **Date** |
| 01 | **Spring Framework Overview*** Introduction to Spring Framework
* Spring Modules
* Spring Projects
* Spring Web Architecture
* **Getting Started with Spring Boot**
* Spring Boot Features
* First Application with Spring Boot
* Basic Spring Annotation(@Controller, @RequestMapping)
* First Spring Boot Application with Apache and Maven Project
 | **Understanding*** What is Spring Framework?
* What are the benefits of Spring Framework?
* What are the Spring Projects and Modules?
* Features of Spring Boot
* Create Spring Web Project
* Some Spring Annotations
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| 02 | **Spring Core Technologies*** Introduction to the IoC container and bean
* Bean Definition
* Bean Lifecycle
* Bean Scope
* Dependency Injection
 | **Understanding*** What is Bean & Container in Spring?
* What is Inversion of Control?
* What is Dependency Injection?
* Injecting the dependency
* Type of dependency injection
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| 03 | **Spring Web MVC*** Introduction to Spring Web MVC Framework
* The DispatcherServlet
* Spring MVC Configuration
* Implementing Controllers
* Mapping Requests
* REST Controllers
* Data Binding & Validation
* Internationalization and Localization (Multi-Language)
* File Upload (Multipart)
 | **Understanding*** What is Spring MVC?
* Spring MVC Configuration
* Flow of Web MVC
* How to map client request to server
* How to validate form data
* How to use multi languages in web app
* How to upload file with Spring
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| 04 | **Spring Boot with View Template Engine (Thymeleaf)*** Thymeleaf
 | **Understanding*** Introduction to thymeleaf
* Text, Variable
* Available Object
* Standard Expression Syntax
* Conditional
* Iteration
* Fragment
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| 05 | **Data Access with Spring*** Simple JDBC & MyBatis
* JPA & Hibernate
 | **Understanding*** Connecting to database using JDBC or MyBatis
* Data access with Hibernate
* What is ORM?
* What is JPA?
* What is Hibernate?
* JPA History
* What are the difference between JPA and Hibernate?
* Why JPA & Hibernate?
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| 06 | **Data Access*** Spring Data JPA
 | **Understanding*** Understanding Spring data JPA
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| N/A | **Mini-Project 03***Will be assigned* | **Practice*** Friendly User Interface
* CRUD
* Upload Files
* Multiple Language
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| 07 | **Spring Web Security*** Spring Security Features
* In-Memory Authentication
* User Detail Service Authentication (Database)
* Password encryption
 | **Understanding*** Securing web resources
* Authenticate user using In-Memory Authentication
* Authenticate user using Database
* Customize login page
* Customize authentication success handler
* Authentication entry point
* Password encryption with BCrypt
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| 08 | **RESTful Web Service with Spring*** First REST Web Service
* Exception Handling Mechanism
* JSON Partial Response
* Basic AJAX
* Web Service Security with Basic Authentication
* Swagger
 | **Understand*** What is RESTful?
* RESTful architecture
* Request & Response data as JSON format
* Exception handling with REST
* How to use AJAX to access data with web service
* web service REST API security with Basic Authentication
* Developer Document(Swagger)
 |  |
| 09 | **HttpClient*** RestTemplate
* Retrofit
 | **Understanding*** Request data from web service using RestTemplate
* Request data from web service using Retrofit
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| 10 | **Spring Multi-Modules Project Architecture*** Refactoring Project Architecture
 | **Understanding*** Enterprise application architecture
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