

# Syllabus

## Module 1 - Introducing NoSQL

- Overview of NoSQL
- Characteristics of NoSQL Databases
- NoSQL Database Categories - Key-Value
- NoSQL Database Categories - Document
- NoSQL Database Categories - Column
- NoSQL Database Categories - Graph
- Database Deployment Options
- Choosing Data Layer
- Summary and Highlights
- Practice Quiz - Basics of NoSQL
- Expert Viewpoints: NoSQL Databases
- ACID vs BASE
- Distributed Databases
- The CAP Theorem
- Challenges in Migrating from RDBMS to NoSQL Databases
- Summary and Highlights
- Practice Quiz - Working with Distributed Data
- Module 1 Graded Quiz

## Module 2 - Introducing MongoDB - An Open-Source NoSQL Database

- Overview of MongoDB
- Advantages of MongoDB
- Use Cases for MongoDB
- Expert Viewpoints: MongoDB
- Hands-On Lab: Getting Started with MongoDB
- Summary and Highlights
- Practice Quiz - MongoDB Basics
- CRUD Operations
- Hands-On Lab: MongoDB CRUD
- Indexes
- Hands-On Lab: MongoDB Indexing
- Aggregation
- Hands-On Lab: MongoDB Aggregation
- Replication & Sharding
- Accessing MongoDB from Python
- Hands-On Lab: Accessing MongoDB from Python
- Summary and Highlights
- Practice Quiz - Working with MongoDB
- Module 2 Graded Quiz

### **Module 3 - Introducing Apache Cassandra - An Open-Source NoSQL Database**

- Overview of Cassandra
- Architecture of Cassandra
- Key Features of Cassandra
- Cassandra Data Model - Part 1
- Cassandra Data Model - Part 2
- Expert Viewpoints: Cassandra
- Introduction to Cassandra Query Language Shell (cqlsh)
- Hands-On Lab: Using the CQL Shell (cqlsh)
- Summary and Highlights
- Practice Quiz - Cassandra Basics
- CQL Types
- Keyspace Operations
- Hands-On Lab: Keyspace Operations
- Table Operations
- Hands-On Lab: Table Operations
- CRUD Operations - Part 1
- CRUD Operations - Part 2
- Hands-On Lab: CRUD Operations
- Summary and Highlights
- Practice Quiz - Working with Cassandra
- Module 3 Graded Quiz

### **Module 4 - Introducing IBM Cloudant - A NoSQL DBaaS**

- Overview of Cloudant
- Cloudant Architecture and Key Technologies
- Expert Viewpoints: IBM Cloudant
- Cloudant Benefits and Solutions
- Deployment Options for Cloudant
- Hands-On Lab [Optional]: Signup for IBM Cloud account
- Hands-On Lab: Create an instance of IBM Cloudant
- Summary and Highlights
- Practice Quiz - Cloudant Basics
- Dashboards in Cloudant
- Hands-On Lab: Dashboards in Cloudant
- Working with Databases in Cloudant
- Hands-On Lab: Working with databases in Cloudant
- HTTP API Basics
- Working with the HTTP API
- Indexing
- Hands-On Lab: Using HTTP API to create and query Cloudant databases

- How to Access Documentation and Support Resources
- Summary and Highlights
- Practice Quiz - Working with Cloudant
- Module 4 Graded Quiz

### **Final Project - Working with NoSQL Databases**

- Hands-on Lab: Setup & Practice Assignment
- Project Overview
- Final Assignment Project
- Peer-Grading of Final Assignment Project
- Final Quiz

### **Course Wrap-Up**

- Reading: Congrats & Next Steps
- Reading: Team and Acknowledgements