BLACKBIRD FOR TRAINING

# Big Data Engineering for Analytics

11 – 15 April 2027
Manama (Bahrain)



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## Introduction

In today's data-driven world, Big Data Engineering plays a pivotal role in processing, storing, and analyzing large volumes of data. This course is designed for aspiring big data engineers who want to master the architecture, design, and implementation of big data systems for analytics. Participants will gain practical insights into data engineering, focusing on building robust, scalable, and fault-tolerant systems while leveraging the power of big data analytics.

Through this course, participants will develop key skills necessary for creating efficient data lakes and processing platforms, and learn how to handle large datasets using technologies like Hadoop, Spark, and NoSQL databases. By the end of the course, you will understand how to effectively manage and analyze data in a big data environment, preparing you for the growing demand for big data engineers in industries worldwide.

## Course Objectives

By the end of this course, participants will:

- Understand Big Data Concepts: Learn the fundamental characteristics of big data, its storage, and analysis techniques. Gain a comprehensive understanding of the various data analytics types and advanced data analytics strategies that are applied in big data environments.
- Gain Expertise in Fault-Tolerant Computing: Dive deep into the principles of resilient distributed datasets RDDs and gain hands-on experience in implementing fault-tolerant computing frameworks for big data processing.
- Master Data Processing and Querying: Learn various data processing techniques, including filtering, selection, and categorization, within the big data analytics ecosystem. Understand the importance of persistence and querying in big data analytics workflows.
- Develop the Skills to Manage Large Data Sets: Build and manage large-scale datasets, while designing appropriate storage systems and access models. Understand how to scale and optimize storage for performance and security.
- Build Practical Skills in Spark and Hadoop: Gain practical experience with the Hadoop ecosystem and Apache Spark, focusing on data manipulation, real-time stream processing, and querying within a distributed data environment.



## Course Outlines

### Day 1: Data Science, Data Engineering, Big Data, and Analytics Perspective

- Introduction to data science and data engineering, and understanding their relationship with big data analytics.
- Big data engineer responsibilities and understanding the roles of data engineers and data scientists in the context of big data engineering.
- Core skills and resources for big data engineers, including data manipulation, system architecture, and data storage.

### Day 2: Architectural Viewpoints and Hadoop Ecosystem

- Overview of architectural viewpoints in big data systems and the Hadoop ecosystem for managing large-scale datasets.
- Study of reference architecture models, including logical views and conceptual views for big data systems.
- In-depth exploration of Hadoop components and its role in big data analytics.

### Day 3: File Storage and Databases for Big Data

- Key concepts of distributed file storage and understanding how NoSQL databases like HBase and Cassandra are optimized for big data environments.
- Hands-on experience with Spark for functional programming in the context of big data.
- Data persistence and storage optimization strategies for efficient data handling.

### Day 4: Management of Big Data

- Deep dive into managing resilient distributed datasets RDDs using Apache Spark.
- Spark SQL for querying big data and using real-time stream processing capabilities in data analytics workflows.
- Best practices in managing large-scale big data initiatives and optimizing them for performance and cost.

### Day 5: Dealing with a Case Study

- Application of concepts learned throughout the course with a real-world big data engineering case study.
- Elaboration of project requirements, including practical implementation of data analytics strategies.
- Project demonstration and report submission, providing participants with valuable hands-on experience.



## Why Attend This Course: Wins & Losses!

Big Data Engineering is one of the most in-demand skill sets in the tech industry. Here’s why this course is a valuable investment for your career:

- Develop Essential Big Data Engineering Skills: This course provides you with the skills required for big data engineers, including understanding big data storage and data persistence strategies. You'll gain hands-on experience with Apache Hadoop, Spark, and NoSQL databases that are essential for building efficient data lakes and processing platforms.
- Unlock Career Opportunities: With big data analytics becoming an integral part of business strategy, big data engineers are in high demand across industries. By mastering key tools and techniques, you position yourself as a competitive candidate in the growing big data engineer job market.
- Hands-on Training with Real-World Applications: Learn to design, implement, and optimize big data systems. You'll gain the practical experience needed to confidently handle real-time data processing and big data management challenges. The project-based learning ensures you can directly apply what you’ve learned to real-world scenarios.
- Learn Advanced Data Analytics Strategies: This course will help you understand data analytics definition and advanced data analytics techniques, including how to use big data platforms for complex data queries, real-time analytics, and optimization of storage models.
- Boost Your Professional Credentials: Earning a data analytics certificate or a certificate in big data engineering will significantly enhance your professional credentials. Completing this course demonstrates your capability to handle complex big data systems and data analytics strategies, making you stand out to potential employers.

## Conclusion

The Big Data Engineering for Analytics course provides the comprehensive knowledge and practical skills needed to succeed as a big data engineer. Whether you're looking to transition into data analytics, advance your career in big data engineering, or acquire expertise in big data systems design, this course is the perfect step forward.

**Enroll today and unlock your potential to become a proficient big data engineer, equipped with the expertise to design, manage, and analyze big data systems efficiently and effectively. Take the next step in mastering big data analytics, and enhance your career prospects with this valuable training.**

