Big Data Advance Program

EduNextgen

Education for Next Generation Leaders

Course Durations: 50 Hours **Course Mode: Online/Offline**

About Company:

EduNextgen extended arm of Product Innovation Academy is a growing entity in education and career transformation, specializing in today's most in-demand skills. A platform with blended learning programs supported by in-trend technology platforms for learning. Engaging organizations for learning development objectives.

Training courses are designed and updated by renowned industry experts. Our blended learning approach combines online classes, instructor-led live virtual classrooms and virtual teaching assistance.

About The Course:

With businesses generating Big Data at a rapid pace, analyzing the data to leverage meaningful business insights is the need of the hour. The demand for Analytics skill is going up steadily but there is a huge deficit on the supply side. In spite of Big Data Analytics being a 'Hot' job, there is still a large number of unfilled jobs across the globe due to shortage of required skill. A McKinsey Global Institute study states that the US will face a shortage of about 190,000 Data Scientists and 1.5 million Managers and Analysts who can understand and make decisions using Big Data by 2018.

This is an extensive program designed to cover most important modules of Big Data required by today's Industry and as well help you achieve Certifications from Hortonworks & Cloudera. The program is bundled with modules like MapReduce, Hive, Pig, Hbase, Zookeeper, Oozie, Scoop, Impala and Flume. Also Spark Components i.e. RDD, SparkSQL, MLlib, Spark Streaming GraphX. And to support your learning path there are resources like our Cloud Labs, Industry Grade Projects, Assignments, Use Cases and more with our world class Technical Support post learning.

The course curriculum and contents are made by industries expert and curriculum covers based of Cloudera and Hotanwork Certification

Why This Course:

- Cover Apache Hadoop & Spark Components i.e. HDFS, Yarn, MapReduce, Pig, Hive, HBase, Sqoop, Flume, Oozie, Scala, RDD, SparkSQL, Spark Streaming
- Hands-on Experience and Use Case
- Project Execution in Different Domain Data Sets and Components i.e. MapReduce, Pig, Hive, RDD, SparkSQL
- Pre-Installed Hadoop/Spark Environment (Plug and Play)
- Cloud Lab, Live Support (24×7)

Participants will get the Access to:

- LMS Access, Cloud Lab, 100+ Assignments, 200+ Quizzes
- Pre-Installed Hadoop/Spark Environment (Plug and Play)
- 10+ Industry Grade Projects in Different Domain
- Live Support via one to one Screen Sharing, Mail and Call
- Course Completion Certificate

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Batch Schedule:

Weekend: 3 Hours per day (Online), 4 Hours per day (Offline)

Weekday: 2 Hours per day (Online), 2 Hours per day (Offline)

Course Curriculum

Module 1: Introduction to Big Data and Hadoop (3 Hours)

This module will help you to understand about the Big Data and Hadoop. Also, this module will cover the Big Data Characteristics, Types of Data, Big Data Application, Hadoop Ecosystem, Hadoop Installation and work with Cloud Lab. Below topics are covered in this module:

- What is Big Data?
- Big Data Growth
- Why Need of More Data?
- Big Data Impacts
- Big Data Characteristics (5V's)
- Types of Data
- Industries who are making the Most of Big Data
- Big Data Applications
- Traditional Model and its problems
- Hadoop: Introduction and Why Hadoop
- Hadoop Characteristics
- Hadoop Ecosystem
- Hadoop Installation/VM/Cloud Lab

Hands on/Programs/Practical:

- Hadoop Installation with Single node Cluster Setup.
- How to Start Hadoop
- JPS Command
- How to work with Cloud Lab

Module 2: YARN and HDFS Architecture (3 Hours)

This module will help you to understand YARN and HDFS Architecture. Also, this module will cover Cluster, Nodes, Racks and HDFS Hands on. Below topics are covered in this module:

- What is Cluster?
- Details about: Blocks, Namenodes, Datanodes, Secondary NameNode
- Introduction to HDFS
- HDFS Federation
- HDFS High Availability
- Racks and Replication Factor
- Rack Awareness

- HDFS File Write Anatomy
- HDFS File Read Anatomy
- HDFS Architecture
- Hadoop 1 vs Hadoop 2
- YARN
- How YARN Runs an Application

Hands on/Programs/Practical:

- HDFC Commands: ls, mkdir, cat, put etc.
- Blocks
- Replication

Module 3: Hadoop: MapReduce Framework (5 Hours)

This module will help you to understand about MapReduce, how to write MapReduce Program and its Framework. Also, this module will cover MapReduce Feature, Phases, Traditional vs MapReduce Solution, Joins Counters etc. Below topics are covered in this module:

- What is MapReduce?
- MapReduce – Features
- MapReduce Phases: Map, Shutfle, Reduce, Combiner
- How Hadoop runs a MapReduce job
- Input Splits
- Traditional vs MapReduce Solution
- Understanding MapReduce Paradigm
- Distributed Cache
- Joins operations in MapReduce
- Counters
- Custom Input Format
- Secondary Sort
- Total Order Sort
- Testing MapReduce with MRUnit

Hands on/Programs/Practical:

- How to Write and Execute Word Count Program
- How to work with Partition and Combiner
- Join Operations
- Shorting
- Testing with MRUnits
- Project Execution in Automobiles Domain via MapReduce

Module 4: Data Transferring using Sqoop and Flume (2 Hours)

This module will help you to understand how to Transfer Data to Hadoop. This module will take deep drive on problem with data loading into Hadoop, Sqoop and its feature, Flume, its feature and how to work with Flume. Below topics are covered in this module:

- Issues with Data Load into Hadoop
- Introduction to Sqoop
- Features of Sqoop
- Sqoop: Installation and Connectors
- Limitations of Sqoop
- Understanding of FLUME
- Data Flow in Flume
- FLUME Features
- FLUME: Installation

Hands on/Programs/Practical:

- Data Transfer into Hadoop using Sqoop
- Data Transfer into Hadoop using Flume

Module 5: Structure Data Analysis with Hive (4 Hours)

This module will help you to understand how to work with Structure Data. Also this module cover Hive, its limitation, Compare with other Database, Table, Index, Joins, Hive UDF. Below topics are covered in this module:

- Hive: Introduction
- Hive: Limitation, Architecture and Components
- RDBMS vs Hive
- Traditional Database and Hive
- Meta Store in Hive
- Hive Data Types
- Partitions & Buckets
- Tables in Hive
- Indexes and View
- Joins in Hive
- Sub Queries
- Embedding Custom Scripts
- Hive Built-in Function
- Hive UDF
- Hive ETL: Loading JSON, XML, Text Data

Hands on/Programs/Practical:

- Hive Commands: Create Database, Table, Insert Data into Table etc.
- Data Loading into Hive Table using Local and Hadoop
- Execute Hive Queries

- Join Operations
- Project Execution in Automobiles Domain via Hive

Module 6: Impala vs Hive (1 Hours)

This module will help you to understand what difference between Impala and Hive. Also this module help you to understand Impala with Running Example. Below topics are covered in this module:

- Impala Introduction
- Impala Feature
- Impala Architecture
- Impala-Shell
- Difference between Impala and Hive

Hands on/Programs/Practical:

- Data Loading into Hadoop and Execute Impala Commands

Module 7: Working with Pig (3 Hours)

This module will help you to understand what PIG is and how we can work with PIG. Also this module help you to understand the difference between PIG and MapReduce, Hive. Below topics are covered in this module:

- Introduction to Pig
- Pig Background and Advantages
- MapReduce vs Pig
- Hive vs Pig
- Pig Components
- Pig Data Types
- Pig Operators
- Pig UDF

Hands on/Programs/Practical:

- How to Start Pig Shell
- How to work with Pig in MapReduce Mode
- Pig: Local Mode
- Data Loading into Pig
- Pig Commands and Dump
- Join Operations in Pig
- Project Execution in Entertainments Domain via Pig

Module 8: Introduction to Hbase and Zookeeper (3 Hours)

This module will help you to understand what NoSQL is and how to work with this. Also this module cover HBase, its Feature, Architecture, Zookeeper. Below topics are covered in this module:

- Introduction to NoSql
- Introduction to HBase
- Why Hbase?
- Industries who use HBase
- Hbase Unique Features
- Storage Mechanism in Hbase
- HBase: Architecture, Components and MemStore
- Data Flow in HBase
- HBase vs RDBMS
- HBase vs HDFS
- HBase vs Hive
- HBase Advantage & Limitations
- Hbase Shell
- Introduction to ZooKeeper
- How to work with ZooKeeper

Hands on/Programs/Practical:

- How to Start HBase
- HBase Command: Status, Version, Whoami etc.
- Tables Managements Commands: Create, List, Describe, Disable, Drop etc.
- Data Manipulation Commands: Count, Put, Get, Delete etc.
- How to Start Zookeeper and work with this

Module 9: Oozie and Advance Project Execution (2 Hours)

This module will help you to understand the Oozie Workflow. Also this module cover Oozie, its Workflow, Feature, Advance Project Execution. Below topics are covered in this module:

- Understanding of Oozie
- Oozie Workflow
- Why Oozie?
- Oozie Feature
- Oozie: Setup & Handson
- Advance Project

Hands on/Programs/Practical:

- Oozie: Setup & Handson
- Understand Project: What is the Project, Dataset, Use Case Execution and Output

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Module 10: Introduction to Apache Spark (2 Hours)

This module will help you to understand what is Apache Spark and Its Components. Also this module will cover Spark Advantages and Impotence. Below topics are covered in this module:

- Introduction of Apache Spark
- Why Spark?
- Spark: Characteristics, Ecosystem/Components & Version
- Spark Advantage
- Spark vs Hadoop
- How Spark work with HDFS and Hive
- Spark Shell and REPL
- Scala IDE

Hands on/Programs/Practical:

- Spark Installation
- How to Start Spark Shell
- Word Count Program using Spark and Hadoop

Module 11: Deep Dive on Scala (6 Hours)

Apache Spark develop on Scala Language, so learning Scala is good compare with other language, Spark Supports Java, Python and R apart from Scala. This module is divide into lessons and each lesions will help you deep understanding about Scala.

Hands on/Programs/Practical:

***All Lesson based on Practical. Code Execution will be for each topics.**

Lesson 1: Deep Dive on Scala – I

- Introduction to Scala
- Why Scala?
- Scala Frameworks
- Use of Scala
- Scala in the Enterprise
- Scala REPL - Read Evaluate Print Loop
- Data Types
- Scala Variables and Operators
- Functions and Lambdas
- Scala Statements and Loops
- val, var and def

Lesson 2: Deep Dive on Scala – II

- Class and Object
- Case Class
- Access Modifier

- Singletons Object
- Companion Objects
- Inheritance
- Packages and package objects
- Traits
- Exception Handling

Lesson 3: Deep Dive on Scala – III

- What is Functional Programming?
- Higher Order Functions
- Anonymous Functions
- Currying
- Closures
- Collection

Module 12: Introduction to RDDs (3 Hours)

This module will help you to understand RDD and its Operation. Also this module cover RDD, its Feature, SparkContext, RDD Function, Transformations, Actions and Join Operations. Below topics are covered in this module:

- Introduction to RDDs
- Why RDD?
- RDDs Features
- SparkContext(sc)
- Data Loading into RDDs
- Key value pair and MapReduce
- RDDs Functions
- Transformation & Actions
- Join Operations

Hands on/Programs/Practical:

- How to Start Spark Shell
- Work Count Program using RDD
- How to Load Data from Hadoop and Local
- Transformations
- Actions
- Join Operations
- Project Execution in Entertainments Domain via RDD

Module 13: Introduction to SparkSQL (3 Hours)

This module will help you to understand working with SparkSQL. Also this module cover SparkSQL, Dataframe, Data Loading and Join operations. Below topics are covered in this module:

- Introduction to SparkSQL
- Spark SQL Context
- Dataframe in SparkSQL
- Data Loading Technique in SparkSQL
- Working with Hive Context and JDBC
- Working with Parquet, JSON and csv
- RDD vs SparkSQL

Hands on/Programs/Practical:

- How to Create SQLContext(sc)
- Data Loading into SparkSQL from Local and Hadoop
- Run the Queries
- Specifying the Schema
- How to Create Datafream
- Reading JSON file and Creating Data Frames
- Reading CSV files with header while starting the Spark Shell
- Join Operations
- Project Execution in Retails Domain via SparkSQL

Module 14: Scala Build tool (SBT) (1 hour)

This module will help you to understand working with Scala Build Tool (SBT). Also this module cover SBT, Installation, Maven and SBT Command. Below topics are covered in this module:

- Introduction to SBT
- SBT Installation
- SBT vs Maven
- SBT Commands
- Build SBT Project

Hands on/Programs/Practical:

- SBT Installation
- Create SBT Projects

Module 15: Introduction to Kafka and Spark Streaming (3 Hours)

This module will help you to understand working with Kafka and Spark Streaming. Also this module cover Kafka Architecture, Producer, Consumer, Topics, Broker etc. Below topics are covered in this module:

- Introduction to Spark Kafka
- Use of Kafka
- Kafka Architecture
- Understanding Producer, Consumer, Topics and Broker
- Replication & Partitions of Topics

- Installation & Configuration
- Spark Streaming Architecture and Abstraction
- DStreams
- Transformations
- Streaming UI
- Connecting with Kafka
- Streaming Exercise

Hands on/Programs/Practical:

- Kafka Installation
- How to work with Producer, Consumer, Topics and Broker
- Word Count Program with Spark Streaming

Module 16: Introduction to MLlib and GraphX (3 Hours)

This module will help you to understand working with MLlib and GraphX. Also this module cover what is MLlib, Graph, Graph operator, etc. Below topics are covered in this module:

- Introduction to MLlib
- Different Algorithms and k-Means
- Running a Spark MLlib Example
- Enabling Native Acceleration for MLlib
- Introduction to Graph-Parallel
- GraphX Components, Construction and Background
- Data Parallel, Graph-Parallel, and RDDs tie in with GraphX
- Visualizing Spark GraphX
- Exploring Graph Operators
- GraphX Handles Visualizations
- Create views and look alternative options

Hands on/Programs/Practical:

- How to Execute MLlib program
- How to work with GraphX
- GraphX Presentation

Module 17: Advance Project Execution using Spark (1 Hours)

Understand Project: What is the Project, Dataset, Use Case Execution and Output

Hands on/Programs/Practical:

- Step by step Project Execution