ITU Centers of Excellence Network for Arab Region

Sudatel Telecommunications Academy (SUDACAD)

Online Training Course on
"Big Data"
24-26 August 2021

TRAINING COURSE OUTLINE

COURSE DESCRIPTION

Title	Big Data
Objectives	The main goal of this course is to help participants learn and understand the concepts of Big Data and its tools, and the skills you need to store, manage, process, and analyse massive amounts of structured, semi-structured or unstructured data, in addition when and how to use Big Data to solve problems. Including the study of modern computing Big Data technologies and scaling up machine learning techniques focusing on industry applications. Mainly the course objectives are: How to Plan and implement a Big Data strategy for your organization, for a better business decision-making.
Dates	24-26 August 2021
Duration	3 Days
Registration deadline	20 August 2021
Training fees	USD 75
Course code	21OI26434ARB-A

DESCRIPTION OF THE TRAINING COURSE

Interested in increasing your knowledge of the Big Data landscape? This course is for those new to data science and interested in understanding why the Big Data Era has come to be. It is for those who want to become conversant with the terminology and the core concepts behind big data problems, applications, and systems. It is for those who want to start thinking about how Big Data might be useful in their business or career. It provides an introduction to one of the most common frameworks, Hadoop, that has made big data analysis easier and more accessible -- increasing the potential for data to transform our world.

LEARNING OUTCOMES

It is expected that upon completion of the training session, participants will be able to:

- Understand the concepts of Big Data and its tools.
- Understand the skills needed to store, manage, process and analyze massive amount of data.
- Know when and how to use Big Data to solve problems.
- Understand the modern computing Big Data technologies.
- Understand how to scale up machine learning techniques focusing on industry applications.
- Plan and implement their organization's big data strategy to make better business decisions.

TARGET POPULATION

This training targets analytics managers, business analysts, software developers, data storage and data processing staff, telecom staff, IT staff, data centers staff, regulators, decision makers and academia. Other institutions and individuals who are interested in having an overview of Big Data are also welcomed to participate in this training course.

ENTRY REQUIREMENTS

- This course is for those new to data science. No prior programming experience is needed, although the ability to install applications and utilize a virtual machine is necessary to complete the hands-on assignments.
- This course relies on several open-source software tools, including Apache Hadoop.

TUTORS/INSTRUCTORS

NAME OF TUTOR(S)/INSTRUCTOR(S)	CONTACT DETAILS
Dr. Shazali Siddig Mohammed	Shazali33@gmail.com

TRAINING COURSE CONTENTS

- Introduction to Big Data
- What is Big Data?
- Big Data: Why & Where?
- Big Data Ecosystem, Industry outlook
- Big Data Applications
- Types of Big Data
- Characteristics of Big Data
- Four V's in Big Data
- Why Analysing Big Data?
- Industry use cases - Popular big data analytic applications
- Data Warehousing and Big Data Analytics
- Big Data & Data Science
- Big Data Engineers and Data Scientists & Data Analyst
- Introduction to Hadoop.
- What is Hadoop
- Big Data Hadoop Stack.
- Hadoop Hardware and Software Requirements.
- Hadoop Architecture.
- Main Hadoop Components.
- Challenges when Managing & Analyzing Big Data.
- Key Components in Big Data Analytics Environment.
- Hadoop Architecture & Cluster.
- Resource Management: YARN Architecture.
- Resource Management: Working with YARN.
- Limitations of Hadoop.
- Hadoop Features and Characteristics.
- Demo – Uses Case.
- Hadoop Applications & HDFS.
- HDFS Architecture & Configuration.
- HDFS Clusters – Name node, Data node.
- Hadoop MapReduce Framework.
- Describe the MapReduce philosophy.
- MapReduce Architecture & Framework.
- Processing & Generating large Data sets.
- Data Flow in MapReduce.
- MapReduce Life cycle.
- Introduction to Spark.
- Components of Spark Unified Stack.
- Resilient Distributed Dataset (RDD).
- Demo – Example Use Case.

TRAINING COURSE SCHEDULE / AGENDA (Khartoum time)

Date	Time; Start time	Topics/Activities
Date for day 1 24/08/2021	10:00 - 11:00	• Introduction to Big Data • What is Big Data? • Big Data: Why & Where? • Big Data Ecosystem, Industry outlook
	11:00 - 12:00	• Big Data Applications • Types of Big Data • Characteristics of Big Data • Four Vs in Big Data
	12:00 - 13:00	• Why Analysing Big Data? • Industry use cases - Popular big data analytic applications Data Warehousing and Big Data Analytics
	13:00 - 14:00	• Big Data & Data Science • Big Data Engineers and Data Scientists & Data Analyst

	Time; Start time	Topics/Activities
Date for day 2 25/08/2021	10:00 - 11:00	• Introduction to Hadoop • What is Hadoop • Big Data Hadoop Stack • Hadoop Hardware and Software Requirements
	11:00 - 12:00	• Hadoop Architecture • Main Hadoop Components • Challenges when Managing & Analyzing Big Data • Key Components in Big Data Analytics Environment
	12:00 - 13:00	• Hadoop Architecture & Cluster • Resource Management: YARN Architecture • Resource Management: Working with YARN
	13:00 - 14:00	• Limitations of Hadoop • Hadoop Features and Characteristics • Demo – Uses Case

Date for day 3	Time; Start time	Topics/Activities
Date for day 3 26/08/2021	10:00 - 11:00	• Hadoop Applications & HDFS • HDFS Architecture & Configuration • HDFS Clusters – Name node, Data node • Hadoop MapReduce Framework • Describe the Map Reduce philosophy
	11:00 - 12:00	• MapReduce Architecture & Framework • Processing & Generating large Data sets • Data Flow in MapReduce • MapReduce Life cycle
	12:00 - 14:00	• I Introduction to Spark • Components of Spark Unified Stack • Resilient Distributed Dataset (RDD) • Demo – Example Use Case
	14:00 - 16:00	• Exam

METHODOLOGY (Didactic Approach)

- Instructor-led class lectures and presentations– slides.
- Reviews and revisions.
- Case studies.

EVALUATION AND GRADING

Participants will be evaluated according to:

- Active interaction in the group exercises and discussions;
- Planned Quizzes;
- Dedication in attending the sessions.

Grading will take into consideration attendance (30%) and a final overall exam (70%).

IMPORTANT: a passing mark of 60% is required for obtaining a completion certificate.

TRAINING COURSE COORDINATION

Course Coordinator:

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REGISTRATION AND PAYMENT

ITU Academy portal account

Registration and payment should be made online at the ITU Academy portal.

To be able to register for the course you MUST first create an account in the ITU Academy portal at the following address:

https://academy.itu.int/user/register

Training registration

When you have an existing account or created a new account, you can register for the course online at the following link: https://academy.itu.int/training-courses/full-catalogue/big-data-1
You can also register by finding your desired course in our training catalogue https://academy.itu.int/training-courses/full-catalogue

Payment

1. On-line payment

A training fee of USD 75 per participant is applied for this training. Payments should be made via the online system using the link mentioned above for training registration at https://academy.itu.int/training-courses/full-catalogue/big-data-1

2. Payment by bank transfer

Where it is not possible to make payment via the online system, select the option for offline payment to generate an invoice using the same link as above. Download the invoice to make a bank transfer to the ITU bank account shown below. Then send the proof of payment/copy of bank transfer slip and the invoice copy to Hcbmail@itu.int and copy the course coordinator.

All bank transaction fees must be borne by the payer.

Failure to submit the above documents may result in the applicant not being registered for the training.

3. Group payment

Should you wish to pay for more than one participant using bank transfer and need one invoice for all of them, create an account as **Institutional Contact? Institutional Contacts** are users that represent an organization. Any student can request to be an institutional contact or to belong to any existing organization.

To do this, head to your profile page by clicking on the **"My account"** button in the user menu. At the bottom of this page you should see two buttons:

a. If you want to **become an institutional contact**, click on the "**Apply to be an Institutional Contact"** button. This will redirect you to a small form that will ask for the organization name. After you fill the name of the organization you want to represent, click on **"continue"** and a request will be created. An ITU Academy manager will manually review this request and accept or deny it accordingly.

ITU BANK ACCOUNT DETAILS:	
Name and Address of Bank:	UBS Switzerland AG Case postale 2600 CH 1211 Geneva 2 Switzerland
Beneficiary:	Union International des Telecommunications
Account number:	240-C8108252.2 (USD)
Swift:	UBSWCHZH80A
IBAN	CH54 0024 0240 C810 8252 2
Amount:	75 USD
Payment Reference:	CoE-ARB 26434 – WBS No. P.40592.1.06

4. Other method of payment

If due to national regulations, there are restrictions that do not allow the payment to be made using options 1 & 2 above, please contact the ITU coordinator for further assistance.