

Data Analytics Essentials

Scope and Sequence

Version 1.0

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Target Audience

The data analytics essentials course is appropriate for learners with a high school reading proficiency, basic computer literacy, and interest in pursuing an entry-level position in data analytics.

Prerequisites

There are no prerequisites for this course. Although beginners should consider completing Introduction to Data Science on Skills for All.

Certification Alignment

There are no target certifications for this course.

Course Description

The Data Analytics Essentials course teaches you the fundamental tools of a data analyst. You will learn to transform, organize, and visualize data with spreadsheet tools such as Excel. You will also learn how to query data from a relational database using SQL and how to improve your data presentations using powerful business intelligence tools like Tableau. By the end of the course, you will have taken the steps necessary to start a data analytics portfolio complete with an analysis of the popular movies dataset, showcasing your skills in Excel, SQL, and Tableau.

- Rich multimedia content, including interactive lab activities, videos, games, and quizzes, addresses a variety of learning styles to help stimulate learning and increase knowledge retention.
- Learning Labs provide interactive tabular and visual representations of data to assist with comprehension and make learning about data enjoyable
- Innovative assessments provide immediate feedback to support the evaluation of knowledge and acquired skills.
- Technical concepts are explained using language that works well for learners at all levels.
- Embedded interactive activities break up reading large content sections and reinforce understanding.
- Learners are encouraged and directed to begin creating an online presence by setting up a Github repository. In addition to blogging about their learnings.

Course Objectives

- Explain how data analytics projects are organized.
- Perform initial data gathering and investigation using a spreadsheet.
- Use Excel functions and formulas to transform data for analysis.
- Obtain appropriate data for analysis.
- Perform statistical analysis on data
- Formulate a structured query to extract & combine data from multiple tables.

- Formulate a structured query using SQL.
- Create visualizations using Tableau.
- Explain the ethical issues and biases that can affect data analytics.
- Revisit your portfolio and learn about building your skillset.

Equipment Requirements

Software

Recommended PC Hardware Requirements

- Computer with either Windows (8.1, 10, 11), MacOS (10.14 or newer) or Ubuntu 20.04 LTS operating system, amd64(x86-64) CPU, 4 GB of free RAM, 10 GB of free disk space. (Not supported: macOS with a M1 CPU and Chromebooks)
- High speed internet access

Course Outline

Table 1 details course modules and their associated objectives. Each module is an integrated unit of learning that consists of content and activities. The size of the module depends on the depth of knowledge and skill needed to master the competency.

Table 1: Module Title and Objective

Module Title / Topic Title	Objective
Module 1: Data Analytics Projects	
1.0 Data Analytics Projects	Explain how data analytics projects are organized.
1.1 Analytics in Real Time	Explain the value of data analytics.
1.2 Data Analytics in Action	Describe the phases in the analytics process
1.3 The Project Portfolio	Explain how to create and share a project portfolio
Module 2: Getting started with data gathering and investigation	
2.0 Getting started with data gathering and investigation	Perform initial data gathering and investigating using a spreadsheet
2.1 Tools or data understanding	Describe common software tools used in data analytics
2.2 Basic Excel concepts and features	Use basic Excel functions to gather and examine data
2.3 Use simple functions for data analysis	Explain how variables and values are used in data analysis.
Module 3: Preparing and cleaning data for analysis	
3.0 Preparing and cleaning data for analysis	Explain how to obtain appropriate data for analysis

Module Title / Topic Title	Objective
3.1 Sources of data	Describe various sources of data that are used in data analytics
3.2 Data in structured files	Describe various types of structured data files.
3.3 Unstructured data	Describe various types of unstructured data sources
3.4 Data preparation	Configure data according to the requirements of an analysis
Module 4: Transforming Data with Excel	
4.0 Transforming Data with Excel analysis	Use Excel functions and formulas to transform data for analysis.
4.1 Sorting and filtering data with Excel	Use data analysis tools and techniques to sort and filter data with Excel.
4.2 Formatting and adjusting data	Use data analysis tools and techniques to format and adjust data with Excel
4.3 Data Calculations	Use Excel techniques to perform data calculations
Module 5: Analyze the data using statistics	
5.0 Analyze the data using statistics	Perform statistical analyses on data
5.1 Using statistics to interpret data	Describe different types of statistics
5.2 Choosing the right visualization for the job	Select data visualizations to best explain analysis results
5.3 Creating visualizations with Excel	Create visualizations with Excel
5.4 Addressing anomalies in data	Interpret visualizations to identify anomalies in data
5.5 Using Excel to address issues with data	Use VLOOKUP or XLOOKUP in Excel to identify and fix issues
Module 6: Introduction to Relational Databases and SQL	
6.0 Introduction to Relational Databases and SQL	Formulate a structured query using SQL
6.1 Basic data management	Explain the basic concepts of databases and data management
6.2 SQL	Create SQL queries to select and output data
Module 7: Introduction to structured queries	
7.0 Introduction to structured queries	Formulate a structured query to extract and combine data from multiple tables.
7.1 Relational Database structures	Explain the structure of relational databases.
7.2 Using SQL with multiple tables	Create SQL queries using multiple data tables
7.3 Combining SQL functions to extract data	Use JOIN and other SQL functions to extract data from multiple tables.
7.4 Management features of SQL and alternatives	Describe how SQL is used to manage databases and what its alternatives are.
Module 8: Introduction to Tableau	
8.0 Introduction to Tableau	Create visualizations using Tableau
8.1 Introducing Tableau	Use the Tableau interface to visualize data

Module Title / Topic Title	Objective
8.2 Create visualization in Tableau	Import data to create visualizations
8.3 Tableau dashboards	Explain the purpose and functionality of a data dashboard.
Module 9: Ethics and Bias in Data	
9.0 Ethics and Bias in Data Analytics	Explain the ethical issues and biases that can affect data analytics.
9.1 Bias in Data Analysis	Explain the types of bias that can impact data analysis results
9.2 Ethical use of data	Explain the ethical issues presented by using data
Module 10: Take the Next Steps	
10.0 Take the Next Steps	Revisit your portfolio and learn about building your skillset
10.1 Requirements for a portfolio	Consider making a portfolio and what to include in it.
10.2 Expanding Your Analytics Skills	Describe advanced analytics tools.