

CDSA 101**Foundations of Data Science and Data Analysis Tools****BLOCK- 01**

Unit 1

Introduction to Data Science- I [What is Data Science? Why Data Science? Data Science Components, Data Manipulation and Visualization, etc.]

Unit 2

Introduction to Data Science- II [Tools for Data Science, Challenges of Data Science Technology, Types of Data Science Jobs, Qualities of a Data Scientist, etc.]

Unit 3

Introduction to Data Science- III [What is Data? structured and unstructured Data, Data Science & Python, what is Data Analytics? Types of Data Analytics, Role of Data Analytics, Data analytics methods and techniques, what is Big Data? Applications of Big Data]

Unit 4

Brief Overview of data analysis tools using Python [Jupyter Notebook, pandas and Bokeh]

BLOCK- 02

Unit 5

Data Science Applications [Real World Applications of Data Science, Some suggestive case studies.]

Unit 6

Tools for Data Science [Brief Introduction to data science tools]

Unit 7

Mathematical Computations with MS Excel [Overview of Microsoft Excel, Formatting and Data Analysis, Formulas, Introductory Statistical Functions, Functions for Personal Finance, Preparing to Print]

Unit 8

Formulas, Functions, Logical and Lookup Functions in MS Excel [More on Formulas and Functions, Logical and Lookup Functions, Conditional Formatting, etc.]

BLOCK- 03

Unit 9

Presenting Data with Charts in MS Excel [Choosing a Chart Type, Formatting Charts, Using Charts with MS Excel]

Unit 10

Data preparation in MS Excel [Importing data, data validation, Filtering, Sorting, etc.]

Unit 11

Advanced Excel- A Tool for data analysis [Data analysis using MS excel, i. e. Rank and Percentile, Correlation, etc.]

Unit 12

Start-up With Formulas: Part-I [Text Functions: Concatenate, Dollar, Left, Mid, Right, Lower, Upper, Proper, Replace, Rept, Find, Search, Substitute, Trim, Trunc, Convert]. [Combine multiple formulas, Writing of the Complex formulas for improvement in formulas writing skills]. [Date and Time Functions: Date, Datevalue, Day, Day360, Minutes, Hours, Now, Today, Month, Year, Yearfrac, Time, Weekday, Workday, Networkdays.]

BLOCK- 04

Unit 13

Start-up With Formulas: Part-II [If, If with OR, If with AND, If with AND & OR, If with OR & AND]. [If with Trim, If with Concatenation, If with Left, Mid, Right]. If with Other formulas, Complex formulas writing in If.

Unit 14

Lookup Functions- Part-I [Introduction to Lookup Functions, Use of Lookup, Vlookup, Hlookup, Index, Indirect Match, Offset. Choose Vlookupwith Name Range, Hlookup with Name Range, Vlookup with Match, Hlookupwith Match]

Unit 15

Lookup Functions- Part-II [Lookup from the Left side of Data. (Lookup, Index and Match), Vlookup with Left, Mid and Right, Vlookup with Multiple Text Functions, Hlookup with Multiple Text Functions, Vlookup from multiple Data Ranges (With the help of Logical and Lookup Functions), Vlookupwith arrays, Hlookup with arrays, Vlookup with other Multiple Lookup functions, Hlookup with other Multiple Lookup functions]

Unit 16

Pivot Table and Pivot Charts

[Start With Pivot Table, Do the Multiple Field Setting in Pivot Table, Pivot form the Multiple Source of Data, Creating Groups, etc.]

BLOCK- 05

Unit 17

Introduction to VBA Macro Programming: Part- I [VBA Macro Programming, Discussion on need of VBA Macros, Where to apply the VBA Macro, Benefit and limitation of VBA Macro, Display of Developers Tab and VB Editor, How to record a VBA Macro, Execution of recorded Macro, Editing the recorded Macro, Introduction to the writing of basic VBA codes, Saving your Macro, Introduction to the Personal Macros.

Unit 18

Introduction to VBA Macro Programming: Part- II [Program Writing Concepts, Defining Variables to Macro, Discussion on different Types of Variables, Use of Local Window, Understanding on VBA Language, Use of decision making statements in Macro by using: If and Else conditions, And /OR conditions, Working With Loops and Worksheet Ranges, etc.]

Unit 19

Introduction to Database concepts [Basics of Database, importance of database, Database models in brief, Sample database designing and rules, basic understanding of ER diagram, Introduction to SQL, frequently asked SQL queries]

Unit 20

Data Analysis Tools [Brief overview of some popular data analysis tools]

Unit 21

Introduction to Statistical Package for the Social Sciences (SPSS) [Overview, entering data in SPSS, cleaning and checking SPSS database, recording data: collapsing SPSS data, constructing scales and checking their reliability]