



datacode360
no. 1 data science platform

DATA CODE 360
#1 Data Science Platform

Data Analytics

about course

DATA ANALYTICS IS THE SCIENCE OF ANALYZING THE RAW DATA IN ORDER TO MAKE CONCLUSIONS ABOUT THAT INFORMATION. MANY OF THE TECHNIQUES AND PROCESSES OF DATA ANALYTICS HAVE BEEN AUTOMATED INTO MECHANICAL PROCESSES AND ALGORITHMS THAT WORK OVER RAW DATA FOR HUMAN CONSUMPTION. DATA ANALYTICS TECHNIQUES CAN REVEAL TRENDS AND METRICS THAT WOULD OTHERWISE BE LOST IN THE MASS OF INFORMATION. THIS INFORMATION CAN THEN BE USED TO OPTIMIZE PROCESSES TO INCREASE THE OVERALL EFFICIENCY OF A BUSINESS OR SYSTEM.

learning outcomes

01. LEARN TO IMPLEMENT MACHINE LEARNING TECHNIQUES USING PYTHON.
02. LEARN DATA VISUALIZATION TECHNIQUES.
03. LEARN TO ANALYZE RAW DATA.
04. APPLY PRINCIPLES OF DATA SCIENCE TO THE ANALYSIS OF BUSINESS PROBLEMS

PYTHON

01. INTRODUCTION TO PYTHON

1. Useful Python Resources
2. Python Tools and Utilities
3. Python Features

02. PYTHON ENVIRONMENT

1. Local Environment Setup
2. Downloads and Installation
3. Setting up Environment Path

03. EXECUTING PYTHON

1. Interactive Mode
2. Scripting Mode
3. Integrated Development Environment

04. PYTHON BASIC SYNTAX

1. Python Identifiers
2. Reserved Words
3. Lines and Indentation

05. PYTHON VARIABLE TYPES

1. Assigning Values to Variables
2. Multiple Assignment
3. Standard Data Types
4. Data Type Conversion

06. PYTHON BASIC OPERATORS

1. Arithmetic Operators
2. Membership Operators
3. Assignment Operators
4. Bitwise Operators

07. PYTHON DESIGN MAKING

1. IF statements
2. IF...ELIF...ELSE statements
3. Nested IF statements

08. PYTHON LOOPS

1. While Loop
2. For Loop
3. Nested Loop
4. Break Control Statement
5. Continue Statement
6. Pass Statement

09. PYTHON NUMBERS

1. Number Type Conversion
2. Mathematical Function
3. Random Number Function
4. Trigonometric Function

10. PYTHON STRINGS

1. String Special Operators
2. String Formatting Operator
3. Built-in String Methods

11. PYTHON LISTS

1. Basic List Operations
2. Indexing and Slicing
3. Built-in functions and methods

12. PYTHON TUPLES

1. Basic Tuple Operations
2. Indexing and Slicing
3. Built-in Functions

13. PYTHON DICTIONARY

1. Basic Dictionary Operations
2. Built-in Functions and Methods
3. Use Cases

14. PYTHON FUNCTION

1. Pass by reference and value
2. Function Arguments
3. Scope of variables
4. Default Argument Values
5. Keyword Arguments
6. Arbitrary Argument Lists
7. Unpacking Argument Lists
8. Lambda Expressions
9. Documentation Strings

15. PYTHON MODULES

1. Importing Modules
2. Namespaces and Scoping
3. Packages

16. PYTHON FILES I/O

1. Writing and Parsing Text Files

17. PYTHON EXCEPTION

1. except clause with multiple exceptions
2. try-finally clause
3. argument of an Exception
4. Raising an Exception
5. User-defined Exceptions

18. PYTHON CLASSES & OBJECTS

1. Creating Classes
2. Creating instance objects
3. Destroying Objects (garbage collection)
4. Custom Classes
5. Attributes and Methods
6. Inheritance & Polymorphism
7. Using Properties to control attribute access

19. COLLECTIONS

1. Deque
2. Counter
3. OrderedDict
4. ChainMap

20. DEBUGGING & TESTING

1. Pdb
2. Breakpoints

21. REGULAR EXPRESSIONS

1. Characters & Character Classes
2. Quantifiers
3. Grouping & Capturing
4. Assertions and Flag
5. The Regular Expression Module

22. ESSENTIAL PACKAGES

1. Operating System
2. System Specific Parameters

23. TESTING

1. Py.test Fundamentals
2. Writing and running test cases

24. DEPLOYING PYTHON APPLICATION

1. Pip
2. Virtualenv
3. The init.py files
4. The setup.py file
5. Installing the package
6. Software Deployment in Python



DATA WRANGLING

25. BLACKBOX INTRODUCTION TO MACHINE LEARNING

1. What is not Machine Learning
2. What is Machine Learning
3. Types of ML
4. Supervised, Unsupervised
5. Classification, Regression
6. Unsupervised Clustering Association
7. Machine Learning Pipeline

26. MICROSOFT EXCEL

1. Introduction - Spreadsheet
2. Functions to Organize Data
3. Filtering, Pivot Tables, Charts
4. Advanced Graphing & Charting

27. SQL

1. SQL Basics
2. SQL Joins
3. SQL Aggregations
4. Queries & Temp Tables
5. SQL Data Cleaning
6. Data Functions

28. TABLEAU

1. Tableau Functions - Bar Charts, Maps, Interactive Dashboards, Scatterplots
2. Time-series Data (Two Methods)
3. Aggregation, Granularity, Level of detail
4. Tableau to various data sets - Excel & CSV
5. Data Blending
6. Data Extracts
7. Advanced Data Preparation

29. ESSENTIAL NUMPY

1. Introduction to NumPy
2. Creation
3. Access
4. Stacking and Splitting
5. Methods
6. Broadcasting

30. PANDAS FOR MACHINE LEARNING

1. Introduction to Pandas
2. Understanding Series & Data Frames
3. Loading CSV, JSON
4. Connecting Databases
5. Descriptive Statistics
6. Accessing subsets of Data - Rows, Columns, Filters

31. UNDERSTANDING VISUALIZATIONS

1. Introduction to matplotlib & seaborn
2. Basic plotting
3. Title, Labels, Legends, Grid, Color Map, xticks, yticks
4. Color, line width
5. Sub Plotting
6. Scatter Plot
7. Histogram
8. Bar Graphs
9. Plotting Distributions
10. Plotting 3D Data Tableau
11. Fundamentals of Tableau

MATHEMATICAL FUNDAMENTALS

32. ESSENTIAL MATHS & STATISTICS

1. Introduction
2. Linear Algebra
3. Matrix Operations
4. Understanding Distributions
5. Probability
6. Concepts
7. Calculus
8. Mean, Mode, Median, Quartile
9. Statistics Concepts
10. Sampling Techniques

TOOLS LEARNED DURING COURSE

