



Master in Data Science

About DevOpsSchool

DevOpsSchool is a unit of "Cotocus PVT Ltd" and a leading platform which helps IT organizations and professionals to learn all the emerging technologies and trend which helps them to learn and embrace all the skills, intelligence, innovation and transformation which requires to achieve the end result, quickly and efficiently. We provide over 40 specialized programs on DevOps, Cloud, Containers, Security, AI, ML and on Big data that are focused on industry requirement and each curriculum is developed and delivered by leading experts in each domain and aligned with the industry standards.

ABOUT COURSE

Data scientist is one of the best suited professions to thrive this century. It is digital, programming-oriented, and analytical. Therefore, it comes as no surprise that the demand for data scientists has been surging in the job marketplace.

However, supply has been very limited. It is difficult to acquire the skills necessary to be hired as a data scientist.



Co-coordinator - Akanksha Kumari

Call/WhatsApp: - +91 1800 889 7977

Mail Address: -

contact@DevOpsSchool.com

Secondary contact - Patrick

Call/WhatsApp: - +91 7004 215 841

Mail Address: - contact@DevOpsSchool.com

Duration	72 Hours
Mode	Online (Instructor-led, live & Interactive)
Projects (Real time scenario based)	1

FEATURES	DEVOPSSCHOOL	OTHERS
Faculty Profile Check	✓	✗
Lifetime Technical Support	✓	✗
Lifetime LMS access	✓	✗
Top 25 Tools	✓	✗
Interviews Kit	✓	✗
Training Notes	✓	✗
Step by Step Web Based Tutorials	✓	✗
Training Slides	✓	✗
Training + Additional Videos	✓	✗

AGENDA OF THE MASTER IN DATADOG TRAINING

Part 1: Introduction

- A Practical Example: What You will Learn in This Course
- What Does the Course Cover

The Field of Data Science - The Various Data Science Disciplines

- Data Science and Business Buzzwords: Why are there so Many?
- What is the difference between Analysis and Analytics
- Business Analytics, Data Analytics, and Data Science: An Introduction
- Continuing with BI, ML, and AI
- A Breakdown of our Data Science Infographic

The Field of Data Science - Connecting the Data Science Disciplines

- Applying Traditional Data, Big Data, BI, Traditional Data Science and ML

The Field of Data Science - The Benefits of Each Disciplines

- The Reason Behind These Disciplines

The Field of Data Science - Popular Data Science Techniques

- Overview
- APM metrics : Infrastructure metrics from integrations

Datadog Events

- Techniques for Working with Traditional Data
- Real Life Examples of Traditional Data
- Techniques for Working with Big Data
- Real Life Examples of Big Data
- Business Intelligence (BI) Techniques
- Real Life Examples of Business Intelligence (BI)
- Techniques for Working with Traditional Methods
- Real Life Examples of Traditional Methods
- Machine Learning (ML) Techniques
- Types of Machine Learning
- Real Life Examples of Machine Learning (ML)

The Field of Data Science - Popular Data Science Tools

- Necessary Programming Languages and Software Used in Data Science

The Field of Data Science - Careers in Data Science

- Finding the Job - What to Expect and What to Look for

The Field of Data Science - Debunking Common Misconceptions

- Debunking Common Misconceptions

Part 2: Probability

- The Basic Probability Formula
- Computing Expected Values
- Frequency
- Events and Their Complements

Probability - Combinatorics

- Fundamentals of Combinatorics
- Permutations and How to Use Them
- Simple Operations with Factorials
- Solving Variations with Repetition
- Solving Variations without Repetition
- Solving Combinations
- Symmetry of Combinations
- Solving Combinations with Separate Sample Spaces
- Combinatorics in Real-Life: The Lottery
- A Recap of Combinatorics
- A Practical Example of Combinatorics

Probability - Bayesian Inference

- Sets and Events
- Ways Sets Can Interact
- Intersection of Sets
- Union of Sets
- Mutually Exclusive Sets
- Dependence and Independence of Sets
- The Conditional Probability Formula
- The Law of Total Probability
- The Additive Rule
- The Multiplication Law
- Bayes' Law
- A Practical Example of Bayesian Inference

Probability - Distributions

- Fundamentals of Probability Distributions
- Types of Probability Distributions
- Characteristics of Discrete Distributions
- Discrete Distributions: The Uniform Distribution
- Discrete Distributions: The Bernoulli Distribution
- Discrete Distributions: The Binomial Distribution
- Discrete Distributions: The Poisson Distribution
- Characteristics of Continuous Distributions
- Continuous Distributions: The Normal Distribution
- Continuous Distributions: The Standard Normal Distribution
- Continuous Distributions: The Students' T Distribution
- Continuous Distributions: The Chi-Squared Distribution
- Continuous Distributions: The Exponential Distribution
- Continuous Distributions: The Logistic Distribution
- A Practical Example of Probability Distributions

Probability - Probability in Other Fields

- Probability in Finance
- Probability in Statistics
- Probability in Data Science

Part 3: Statistics

- Population and Sample

Statistics - Descriptive Statistics

- Types of Data
- Levels of Measurement
- Categorical Variables - Visualization Techniques
- Categorical Variables Exercise
- Numerical Variables - Frequency Distribution Table
- Numerical Variables Exercise
- The Histogram
- Histogram Exercise
- Cross Tables and Scatter Plots
- Cross Tables and Scatter Plots Exercise
- Mean, median and mode
- Mean, Median and Mode Exercise
- Skewness
- Skewness Exercise
- Variance
- Variance Exercise
- Standard Deviation and Coefficient of Variation
- Standard Deviation
- Standard Deviation and Coefficient of Variation Exercise
- Covariance
- Covariance Exercise
- Correlation Coefficient
- Correlation
- Correlation Coefficient Exercise

Datadog Real User Monitoring

- Get Started
- Dashboards
- Explorer
- Data Collected

Statistics - Practical Example: Descriptive Statistics

- Practical Example: Descriptive Statistics
- Practical Example: Descriptive Statistics Exercise

Statistics - Inferential Statistics Fundamentals

- Introduction
- What is a Distribution
- The Normal Distribution
- The Standard Normal Distribution
- The Standard Normal Distribution Exercise
- Central Limit Theorem
- Standard error
- Estimators and Estimates

Statistics - Inferential Statistics: Confidence Intervals

- What are Confidence Intervals?
- Confidence Intervals; Population Variance Known; Z-score
- Confidence Intervals; Population Variance Known; Z-score; Exercise
- Confidence Interval Clarifications
- Student's T Distribution
- Confidence Intervals; Population Variance Unknown; T-score
- Confidence Intervals; Population Variance Unknown; T-score; Exercise
- Margin of Error
- Confidence intervals. Two means. Dependent samples
- Confidence intervals. Two means. Dependent samples Exercise
- Confidence intervals. Two means. Independent Samples (Part 1)
- Confidence intervals. Two means. Independent Samples (Part 1). Exercise
- Confidence intervals. Two means. Independent Samples (Part 2)
- Confidence intervals. Two means. Independent Samples (Part 2). Exercise
- Confidence intervals. Two means. Independent Samples (Part 3)

Statistics - Practical Example: Inferential Statistics

- Practical Example: Inferential Statistics
- Practical Example: Inferential Statistics Exercise

Statistics - Hypothesis Testing

- Further Reading on Null and Alternative Hypothesis
- Null vs Alternative Hypothesis
- Rejection Region and Significance Level
- Type I Error and Type II Error
- Test for the Mean. Population Variance Known
- Test for the Mean. Population Variance Known Exercise
- p-value
- Test for the Mean. Population Variance Unknown
- Test for the Mean. Population Variance Unknown Exercise
- Test for the Mean. Dependent Samples
- Test for the Mean. Dependent Samples Exercise
- Test for the mean. Independent Samples (Part 1)
- Test for the mean. Independent Samples (Part 1). Exercise
- Test for the mean. Independent Samples (Part 2)
- Test for the mean. Independent Samples (Part 2). Exercises

Statistics - Hypothesis Testing

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- Test for the mean. Independent Samples (Part 2). Exercise

Statistics - Practical Example: Hypothesis Testing

- Practical Example: Hypothesis Testing
- Practical Example: Hypothesis Testing Exercise

Part 4: Introduction to Python

- Introduction to Programming
- Why Python?
- Why Jupyter?
- Installing Python and Jupyter
- Understanding Jupyter's Interface - the Notebook Dashboard
- Prerequisites for Coding in the Jupyter Notebooks
- Jupyter's Interface
- Python 2 vs Python 3

Python - Variables and Data Types

- Variables
- Numbers and Boolean Values in Python
- Python Strings

Python - Basic Python Syntax

- Using Arithmetic Operators in Python
- The Double Equality Sign
- How to Reassign Values
- Add Comments
- Understanding Line Continuation
- Indexing Elements
- Structuring with Indentation

Python - Other Python Operators

- Comparison Operators
- Logical and Identity Operators

Python - Conditional Statements

- The IF Statement
- The ELSE Statement
- A Note on Boolean Values

Python - Python Functions

- Add your content...Defining a Function in Python
- How to Create a Function with a Parameter
- Defining a Function in Python - Part II
- How to Use a Function within a Function
- Conditional Statements and Functions
- Functions Containing a Few Arguments
- Built-in Functions in Python
- Python Functions

Python - Sequences

- Lists
- Using Methods
- List Slicing
- Tuples
- Dictionaries

Python - Iterations

- For Loops
- While Loops and Incrementing
- Lists with the range() Function
- Conditional Statements and Loops
- Conditional Statements, Functions, and Loops
- How to Iterate over Dictionaries

Python - Advanced Python Tools

- Object Oriented Programming
- Modules and Packages
- What is the Standard Library?
- Importing Modules in Python

Python - Sequences

- Lists
- Using Methods
- List Slicing
- Tuples

Part 5: Advanced Statistical Methods in Python

- Introduction to Regression Analysis

Advanced Statistical Methods - Linear Regression with StatsModels

- The Linear Regression Model
- Correlation vs Regression
- Geometrical Representation of the Linear Regression Model
- Python Packages Installation
- First Regression in Python
- First Regression in Python Exercise
- Using Seaborn for Graphs
- How to Interpret the Regression Table
- Decomposition of Variability
- What is the OLS?
- R-Squared

Advanced Statistical Methods - Multiple Linear Regression with StatsModels

- Multiple Linear Regression
- Adjusted R-Squared
- Multiple Linear Regression Exercise
- Test for Significance of the Model (F-Test)
- OLS Assumptions
- A1: Linearity
- A2: No Endogeneity
- A3: Normality and Homoscedasticity
- A4: No Autocorrelation
- A5: No Multicollinearity
- Dealing with Categorical Data - Dummy Variables
- Making Predictions with the Linear Regression

Advanced Statistical Methods - Linear Regression with sklearn

- What is sklearn and How is it Different from Other Packages
- How are we Going to Approach this Section?
- Simple Linear Regression with sklearn
- Simple Linear Regression with sklearn - A StatsModels-like Summary Table
- A Note on Normalization
- Simple Linear Regression with sklearn - Exercise
- Multiple Linear Regression with sklearn
- Calculating the Adjusted R-Squared in sklearn
- Calculating the Adjusted R-Squared in sklearn - Exercise
- Feature Selection (F-regression)
- A Note on Calculation of P-values with sklearn
- Creating a Summary Table with P-values
- Multiple Linear Regression - Exercise
- Feature Scaling (Standardization)
- Feature Selection through Standardization of Weights
- Predicting with the Standardized Coefficients
- Feature Scaling (Standardization) - Exercise
- Underfitting and Overfitting
- Train - Test Split Explained

Advanced Statistical Methods - Practical Example: Linear Regression

- Practical Example: Linear Regression (Part 1)
- Practical Example: Linear Regression (Part 2)
- A Note on Multicollinearity
- Practical Example: Linear Regression (Part 3)
- Dummies and Variance Inflation Factor - Exercise
- Practical Example: Linear Regression (Part 4)
- Dummy Variables - Exercise
- Practical Example: Linear Regression (Part 5)
- Linear Regression - Exercise

Advanced Statistical Methods - Logistic Regression

- Introduction to Logistic Regression
- A Simple Example in Python
- Logistic vs Logit Function
- Building a Logistic Regression
- Building a Logistic Regression - Exercise
- An Invaluable Coding Tip
- Understanding Logistic Regression Tables
- Understanding Logistic Regression Tables - Exercise
- What do the Odds Actually Mean
- Binary Predictors in a Logistic Regression
- Binary Predictors in a Logistic Regression - Exercise
- Calculating the Accuracy of the Model
- Underfitting and Overfitting
- Testing the Model
- Testing the Model - Exercise

Advanced Statistical Methods - Cluster Analysis

- Introduction to Cluster Analysis
- Some Examples of Clusters
- Difference between Classification and Clustering
- Math Prerequisites

Advanced Statistical Methods - K-Means Clustering

- K-Means Clustering
- A Simple Example of Clustering
- A Simple Example of Clustering - Exercise
- Clustering Categorical Data
- Clustering Categorical Data - Exercise
- How to Choose the Number of Clusters
- How to Choose the Number of Clusters - Exercise
- Pros and Cons of K-Means Clustering
- To Standardize or not to Standardize
- Relationship between Clustering and Regression
- Market Segmentation with Cluster Analysis (Part 1)
- Market Segmentation with Cluster Analysis (Part 2)
- How is Clustering Useful?
- EXERCISE: Species Segmentation with Cluster Analysis (Part 1)
- EXERCISE: Species Segmentation with Cluster Analysis (Part 2)

Advanced Statistical Methods - Other Types of Clustering

- Types of Clustering
- Dendrogram
- Heatmaps

Part 6: Mathematics

- What is a Matrix?
- Scalars and Vectors
- Linear Algebra and Geometry
- Arrays in Python - A Convenient Way To Represent Matrices
- What is a Tensor?
- Addition and Subtraction of Matrices
- Errors when Adding Matrices
- Transpose of a Matrix
- Dot Product
- Dot Product of Matrices
- Why is Linear Algebra Useful?

Part 7: Deep Learning

- What to Expect from this Part?

Deep Learning - Introduction to Neural Networks

- Introduction to Neural Networks
- Training the Model
- Types of Machine Learning
- The Linear Model (Linear Algebraic Version)
- The Linear Model
- The Linear Model with Multiple Inputs
- The Linear model with Multiple Inputs and Multiple Outputs
- Graphical Representation of Simple Neural Networks
- What is the Objective Function?
- Common Objective Functions: L2-norm Loss
- Common Objective Functions: Cross-Entropy Loss
- Optimization Algorithm: 1-Parameter Gradient Descent
- Optimization Algorithm: n-Parameter Gradient Descent

Deep Learning - How to Build a Neural Network from Scratch with NumPy

- Basic NN Example (Part 1)
- Basic NN Example (Part 2)
- Basic NN Example (Part 3)
- Basic NN Example (Part 4)
- Basic NN Example Exercises

Deep Learning - TensorFlow 2.0: Introduction

- How to Install TensorFlow 2.0
- TensorFlow Outline and Comparison with Other Libraries
- TensorFlow 1 vs TensorFlow 2
- A Note on TensorFlow 2 Syntax
- Types of File Formats Supporting TensorFlow
- Outlining the Model with TensorFlow 2
- Interpreting the Result and Extracting the Weights and Bias
- Customizing a TensorFlow 2 Model
- Basic NN with TensorFlow: Exercises

Deep Learning - Digging Deeper into NNs: Introduction Deep Neural Networks

- What is a Layer?
- What is a Deep Net?
- Digging into a Deep Net
- Non-Linearities and their Purpose
- Activation Functions
- Activation Functions: Softmax Activation
- Backpropagation
- Backpropagation Picture
- Backpropagation - A Peek into the Mathematics of Optimization

Deep Learning - Overfitting

- What is Overfitting?
- Underfitting and Overfitting for Classification
- What is Validation?
- Training, Validation, and Test Datasets
- N-Fold Cross Validation
- Early Stopping or When to Stop Training

Deep Learning - Initialization

- What is Initialization?
- Types of Simple Initializations
- State-of-the-Art Method - (Xavier) Glorot Initialization

Deep Learning - Digging into Gradient Descent and Learning Rate Schedules

- Stochastic Gradient Descent
- Problems with Gradient Descent
- Momentum
- Learning Rate Schedules, or How to Choose the Optimal Learning Rate
- Learning Rate Schedules Visualized
- Adaptive Learning Rate Schedules (AdaGrad and RMSprop)
- Adam (Adaptive Moment Estimation)

Deep Learning - Preprocessing

- Preprocessing Introduction
- Types of Basic Preprocessing
- Standardization
- Preprocessing Categorical Data
- Binary and One-Hot Encoding

Deep Learning - Classifying on the MNIST Dataset

- MNIST: The Dataset
- MNIST: How to Tackle the MNIST
- MNIST: Importing the Relevant Packages and Loading the Data
- MNIST: Preprocess the Data - Create a Validation Set and Scale It
- MNIST: Preprocess the Data - Scale the Test Data - Exercise
- MNIST: Preprocess the Data - Shuffle and Batch
- MNIST: Preprocess the Data - Shuffle and Batch - Exercise
- MNIST: Outline the Model
- MNIST: Select the Loss and the Optimizer
- MNIST: Learning
- MNIST - Exercises
- MNIST: Testing the Model

Deep Learning - Business Case Example

- Business Case: Exploring the Dataset and Identifying Predictors
- Business Case: Outlining the Solution
- Business Case: Balancing the Dataset
- Business Case: Preprocessing the Data
- Business Case: Preprocessing the Data - Exercise
- Business Case: Load the Preprocessed Data
- Business Case: Load the Preprocessed Data - Exercise
- Business Case: Learning and Interpreting the Result
- Business Case: Setting an Early Stopping Mechanism
- Setting an Early Stopping Mechanism - Exercise
- Business Case: Testing the Model
- Business Case: Final Exercise

Deep Learning - Conclusion

- Summary on What You've Learned
- What's Further out there in terms of Machine Learning
- DeepMind and Deep Learning
- An overview of CNNs
- An Overview of RNNs
- An Overview of non-NN Approaches

Appendix: Deep Learning - TensorFlow 1: Introduction

- How to Install TensorFlow 1
- A Note on Installing Packages in Anaconda
- TensorFlow Intro
- Actual Introduction to TensorFlow
- Types of File Formats, supporting Tensors
- Basic NN Example with TF: Inputs, Outputs, Targets, Weights, Biases
- Basic NN Example with TF: Loss Function and Gradient Descent
- Basic NN Example with TF: Model Output
- Basic NN Example with TF Exercises

Appendix: Deep Learning - TensorFlow 1: Classifying on the MNIST Dataset

- MNIST: What is the MNIST Dataset?
- MNIST: How to Tackle the MNIST
- MNIST: Relevant Packages
- MNIST: Model Outline
- MNIST: Loss and Optimization Algorithm
- Calculating the Accuracy of the Model
- MNIST: Batching and Early Stopping
- MNIST: Learning
- MNIST: Results and Testing
- MNIST: Solutions
- MNIST: Exercises

Appendix: Deep Learning - TensorFlow 1: Business Case

- Business Case: Getting Acquainted with the Dataset
- Business Case: Outlining the Solution
- The Importance of Working with a Balanced Dataset
- Business Case: Preprocessing
- Business Case: Preprocessing Exercise
- Creating a Data Provider
- Business Case: Model Outline
- Business Case: Optimization
- Business Case: Interpretation
- Business Case: Testing the Model
- Business Case: A Comment on the Homework
- Business Case: Final Exercise

Software Integration

- What are Data, Servers, Clients, Requests, and Responses
- What are Data Connectivity, APIs, and Endpoints?
- Taking a Closer Look at APIs
- Communication between Software Products through Text Files
- Software Integration - Explained

Case Study - What's Next in the Course?

- Game Plan for this Python, SQL, and Tableau Business Exercise
- The Business Task
- Introducing the Data Set

Case Study - Preprocessing the 'Absenteesism_data'

- What to Expect from the Following Sections?
- Importing the Absenteeism Data in Python
- Checking the Content of the Data Set
- Introduction to Terms with Multiple Meanings
- What's Regression Analysis - a Quick Refresher
- Using a Statistical Approach towards the Solution to the Exercise
- Dropping a Column from a DataFrame in Python
- EXERCISE - Dropping a Column from a DataFrame in Python
- SOLUTION - Dropping a Column from a DataFrame in Python
- Analyzing the Reasons for Absence
- Obtaining Dummies from a Single Feature
- EXERCISE - Obtaining Dummies from a Single Feature
- SOLUTION - Obtaining Dummies from a Single Feature
- Dropping a Dummy Variable from the Data Set
- More on Dummy Variables: A Statistical Perspective
- Classifying the Various Reasons for Absence
- Using .concat() in Python
- EXERCISE - Using .concat() in Python
- SOLUTION - Using .concat() in Python
- Reordering Columns in a Pandas DataFrame in Python
- EXERCISE - Reordering Columns in a Pandas DataFrame in Python
- SOLUTION - Reordering Columns in a Pandas DataFrame in Python
- Creating Checkpoints while Coding in Jupyter
- EXERCISE - Creating Checkpoints while Coding in Jupyter
- SOLUTION - Creating Checkpoints while Coding in Jupyter
- Analyzing the Dates from the Initial Data Set
- Extracting the Month Value from the "Date" Column
- Extracting the Day of the Week from the "Date" Column
- EXERCISE - Removing the "Date" Column
- Analyzing Several "Straightforward" Columns for this Exercise
- Working on "Education", "Children", and "Pets"
- Final Remarks of this Section
- A Note on Exporting Your Data as a *.csv File

Case Study - Applying Machine Learning to Create the 'absenteeism_module'

- Exploring the Problem with a Machine Learning Mindset
- Creating the Targets for the Logistic Regression
- Selecting the Inputs for the Logistic Regression
- Standardizing the Data
- Splitting the Data for Training and Testing
- Fitting the Model and Assessing its Accuracy
- Creating a Summary Table with the Coefficients and Intercept
- Interpreting the Coefficients for Our Problem
- Standardizing only the Numerical Variables (Creating a Custom Scaler)
- Interpreting the Coefficients of the Logistic Regression
- Backward Elimination or How to Simplify Your Model
- Testing the Model We Created
- Saving the Model and Preparing it for Deployment
- ARTICLE - A Note on 'pickling'
- EXERCISE - Saving the Model (and Scaler)
- Preparing the Deployment of the Model through a Module

Case Study - Analyzing the Predicted Outputs in Tableau

- EXERCISE - Age vs Probability
- Analyzing Age vs Probability in Tableau
- EXERCISE - Reasons vs Probability
- Analyzing Reasons vs Probability in Tableau
- EXERCISE - Transportation Expense vs Probability
- Analyzing Transportation Expense vs Probability in Tableau

Bonus Lecture

- Bonus Lecture: Next Steps

Thank you!

Connect with us for more info

Call/WhatsApp: - +91 968 682 9970

Mail: - contact@DevOpsSchool.com

www.DevOpsSchool.com