



# DATA SCIENTIST

## STATISTICS & PROBABILITY

### 1. Descriptive statistics

- descriptive statistics-[Intro to Descriptive Statistics](#), [Descriptive Statistical Analysis helps... | by Niklas Donges | Towards Data Science](#)
- Probability-[Theoretical probability | Statistics and Probability \(video\) | Khan Academy](#)
- Sample spaces-[Probability with counting outcomes \(video\) | Khan Academy](#)

- Set operations- [Intersection and union of sets \(video\) | Khan Academy](#)
- Addition rule- [Probability with Venn diagrams \(video\) | Khan Academy](#)
- Multiplications rule for independent events-  
[Sample spaces for compound events \(video\) | Khan Academy](#)
- Multiplications rule for dependent events-  
[Dependent probability introduction \(video\) | Khan Academy](#)
- Conditional probability and independence-  
[Calculating conditional probability \(video\) | Khan Academy](#)

## 2. Combinations and Permutations

- Counting principles and factorial- [Count outcomes using tree diagram \(video\) | Khan Academy](#)
- Permutations- [Permutation formula \(video\) | Permutations | Khan Academy](#)
- Combinations- [Intro to combinations \(video\) | Combinations | Khan Academy](#)

## 3.Distributions

- Normal distributions and the empirical rule- [Qualitative sense of normal distributions \(video\) | Khan Academy](#)
- Introduction to sampling distributions- [Introduction to sampling distributions \(video\) | Khan Academy](#)
- Sampling distributions of a sample proportion- [Sampling distribution of sample proportion part 1 \(video\) | Khan Academy](#)
- Sampling distributions of a sample mean- [Inferring population mean from sample mean \(video\) | Khan Academy](#)

## 4.Confidence intervals

- confidence intervals- [Confidence intervals and margin of error \(video\) | Khan Academy](#)
- Estimating sample proportions- [Confidence interval example \(video\) | Khan Academy](#)
- Estimating sample means- [Introduction to t statistics \(video\) | Khan Academy](#)

## 5.Hypothesis

- Hypothesis Testing- [Simple hypothesis testing \(video\) | Khan Academy](#)
- Error probabilities and power- [Introduction to Type I and Type II errors \(video\) | Khan Academy](#)
- Tests about a population proportion- [Constructing hypotheses for a significance test about a proportion \(video\) | Khan Academy](#)
- Tests about a population mean- [Writing hypotheses for a significance test about a mean \(video\) | Khan Academy](#)

# LINEAR ALGEBRA

## 1. Vectors and Spaces

- Vectors-[Vector intro for linear algebra \(video\) | Khan Academy](#)
- Linear Combinations and Spans-[Linear combinations and span \(video\) | Khan Academy](#)
- Subspaces and the basis for a subspace-[Linear subspaces \(video\) | Khan Academy](#)

## 2. Dot Product

- Vector dot and cross products-[Vector dot product and vector length \(video\) | Khan Academy](#)

## 3. Matrix Transformations

- Functions and Linear Transformations-[A more formal understanding of functions \(video\) | Khan Academy](#)
- Transformations and Matrix Multiplications-[Compositions of linear transformations 1 \(video\) | Khan Academy](#)
- Inverse Functions and Transformations-[Introduction to the inverse of a function \(video\) | Khan Academy](#)
- Inverses and Determinants-[Deriving a method for determining inverses \(video\) | Khan Academy](#)

- Transpose of a Matrix-[Transpose of a matrix \(video\) | Khan Academy](#)

## 4. Eigenvalues and Eigenvectors

- Eigenvalues and Eigenvectors-[Eigenvector and Eigenvalue \(mathsisfun.com\)](#)

## 5. Integrals

- Approximation with Riemann Sums-[Riemann approximation introduction \(video\) | Khan Academy](#)
- Definite Integrals with Riemann Sums-[Definite integral as the limit of a Riemann sum \(video\) | Khan Academy](#)
- The Fundamental Theorem of Calculus and Accumulation Functions-[The fundamental theorem of calculus and accumulation functions \(video\) | Khan Academy](#)
- Properties of Definite Integrals-[Negative definite integrals \(video\) | Khan Academy](#)
- The Fundamental Theorem of Calculus and Definite Integrals-[The fundamental theorem of calculus and definite integrals \(video\) | Khan Academy](#)
- Reverse Power Rule-[Reverse power rule \(video\) | Integrals | Khan Academy](#)
- Indefinite Integrals of Common Functions-[Indefinite integral of 1/x \(antiderivative of 1/x\) \(video\) | Khan Academy](#)
- Definite Integrals of Common Functions-[Definite integrals: reverse power rule \(video\) | Khan Academy](#)

# PYTHON PROGRAMMING

Python-[Roadmap to DevOps \(youtube.com\)](#)

## NUMPY

- Numpy-[Your fav creators are loving the #motoG34 5G. Grab it for ₹9,999\\* starting 17th Jan on @flipkart! \(youtube.com\)](#)

## PANDAS

- Pandas-[Pandas & Python for Data Analysis by Example – Full Course for Beginners \(youtube.com\)](#)

## MATPLOTLIB

- Matplotlib-[Matplotlib Crash Course \(youtube.com\)](#)