

## Lesson Plan

# STATISTICS

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The goal of this course is to provide a comprehensive overview of the basics of statistics you will need to start your data science journey.

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**In-class Sessions** \_\_\_\_\_: 10 In-classes / 30 hours


**Lab Sessions** \_\_\_\_\_: 4 or 5 Labs / 4 or 5 hours

## Prerequisites

- Basic Math
- Python Experience

## Course Outline

1. Fundamentals of Statistics-1
  - 1.1 Introduction
  - 1.2. Types of Data
  - 1.3. Level of Measurements
  - 1.4. Graphical Representation of Data
  - 1.5. Population & Sample
2. Fundamentals of Statistics-2
  - 2.1. Central Tendency (Measure of Centre)
  - 2.2. Dispersion (Measure of Spread)
  - 2.3. Scatter Plot & Box Plot
  - 2.4. Correlation and Covariance
  - 2.5. Linear Regression
3. Probability
  - 3.1. Concept of Probability
  - 3.2. Permutation and Combination
  - 3.3. Intersection, Unions and Complements
  - 3.4. Independent and Dependent Events
  - 3.5. Conditional Probability

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4. Probability Distributions
    - 4.1. Random Variables
    - 4.2. Discrete Probability Distributions
    - 4.3. Continuous Probability Distributions
  5. Central Limit Theorem and Confidence Intervals
    - 5.1. Sampling
    - 5.2. Central Limit Theorem
    - 5.3. Sampling Error and Confidence Intervals
  6. Hypothesis Testing
    - 6.1. Basic Concepts of Hypothesis Testing
    - 6.2. Hypothesis Tests (Comparing Means)

## Materials & Resources

- Clarusway Learning Management System (LMS)
- SciPy Documentation
- Wackerly, D., Mendenhall, W., & Scheaffer, R. L. (2014). Mathematical statistics with applications. Cengage Learning.
- [StatQuest with Josh Starmer](#)

## Tools and Software

- Zoom, Slack, Kahoot, Peardeck Applications
- Jupyter Notebook, Google Colab
- SciPy, Numpy, Pandas, Matplotlib, Seaborn

## Assignments & Projects

### Assignments

- Assignment-1 (Data Types, Level of Measurements)
- Assignment-2 (Python Notebook)
- Assignment-3 (Probability)
- Assignment-4 (Distributions & CIs)
- Assignment-5 (Hypothesis Tests)



## Projects

No project.

