Lesson Plan  
STATISTICS

short line

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.

**Custodian :** Jason-Acad.Coord. ([jason@clarusway.com](mailto:jason@clarusway.com))

**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

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](https://www.youtube.com/c/joshstarmer)

# 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.

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