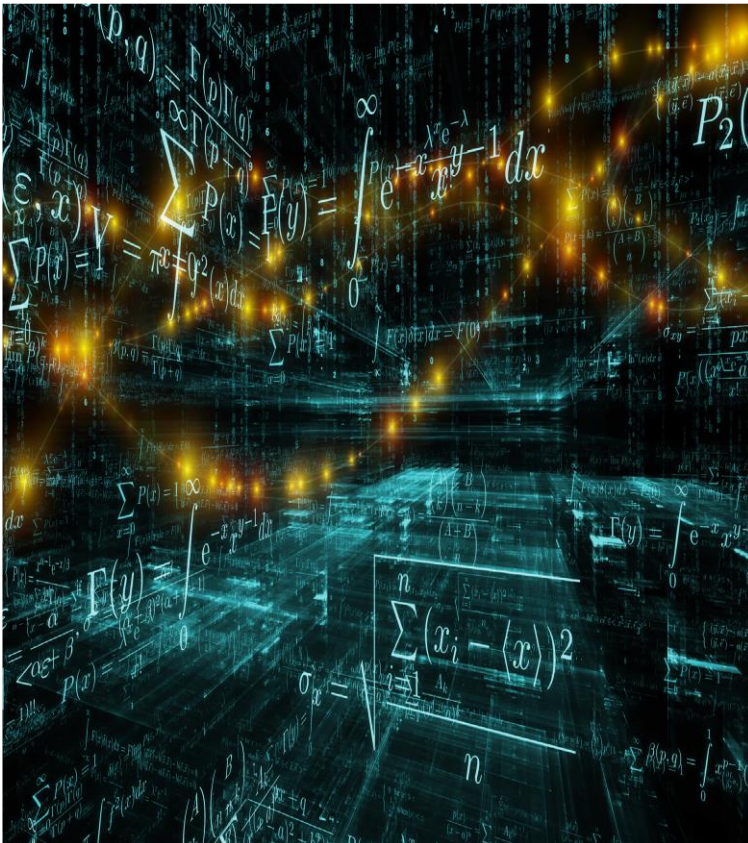




Offered at Sorbonne University Abu Dhabi



# MULTIVARIATE DATA ANALYSIS

By Dr. Tanujit Chakraborty

## PREREQUISITE

- Linear Algebra and Multivariate Calculus
- Probability and Distribution Theory
- Descriptive Statistics
- Inferential Statistics
- Basics of R & RStudio

## CHAPTERS

- Recap of Prerequisites
- Simple Linear Regression
- Multiple Linear Regression
- Model Selection
- Multicollinearity
- Shrinkage Methods – Ridge & LASSO
- Model Adequacy Checking
- Moving Beyond Linearity
- Generalized Linear Models
- Dummy Variables
- Logistic Regression
- Time Series Forecasting
- Singular Value Decomposition
- SVD in Image Processing
- Dimensionality Reduction Techniques
- PCA, FA, and Market Basket Analysis
- Data Analysis and Applications in R
- Stanford Medicine – MDA Tools for Biomedical Data Analysis

## PREFACE

“Multivariate Data Analysis” course offered by Dr. Tanujit Chakraborty for advanced Bachelor students in Mathematics with Specialisation in Data Science for Artificial Intelligence at Sorbonne University Abu Dhabi. The instructor have used slides, handwritten notes, data and codes for teaching this course.

## REFERENCE

- Introduction to Linear Regression by Montgomery et al. (2001)
- Applied Regression Analysis by Draper and Smith (1998)
- Regression and Other Stories by Vehtari et al. (2020)
- The Elements of Statistical Learning by Friedman et al. (2017)
- Foundations of Statistics for Data Scientists: With R and Python by Agresti et al. (2021)