



# **ST ALOYSIUS**

(DEEMED TO BE **UNIVERSITY**)

MANGALURU 575 003 - INDIA

# **AN INTRODUCTION TO DATA ANALYSIS**

## **USING R PROGRAMMING**

### **CERTIFICATE COURSE**

**By**

**Department of Statistics**



**Course Co-ordinator:**  
**Ms Stephil M P**

## Value Added Programs

### Structure

Course	Duration of the Hour	Modules
Certificate	30	2
Diploma/PG Diploma	60	4

- **First year** Undergraduate/Post graduate Students should complete ONE certificate course before the commencement of the even semester examination.
- **Second year** Undergraduate Students should complete ONE certificate course before the commencement of the even semester examination.
- All certificate courses will be conducted online using the LMS portal of the college: <https://sac-elearning.com/>. However the courses requiring hands on training will be conducted in the college premises outside the working hours.
- All courses will be charged for the students. The details available in the LMS portal

### MAXIMUM INTAKE OF STUDENTS

- Intake of students for the certificate course Without Hands on training: **80**
- Intake of students for the certificate course With Hands on Training: **40**

**Course Name:** An Introduction to Data Analysis Using R Programming

**Course Duration:** 30 Hours

**Course Type:** CC

**Mode:** Offline

**Course Coordinator:**

Ms Stephil M P

Teaching staff assistant,

School of Physical Sciences,

St Aloysius (Deemed to be University)

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**Course Instructors:**

**Ms Shwetha Bangera**

**Teaching staff assistant,**

**School of Physical Sciences,**

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**An Introduction to Data Analysis Using R**

**MODULE I: Introduction to R and R-Studio**

**(15 Hrs)**

Introduction to R: Installation, command line environment, R as a calculator: The four basic arithmetic operations. Use of parentheses nesting up to arbitrary level. The power operation. Evaluation of simple expressions. Quotient and remainder operations for integers. Standard functions, e.g., sin, cos, exp, log. The different types of numbers in R: Division by zero leading to Inf or -Inf. NaN. NA. No need to go into details. Variables. Creating a vector using c(), seq() and colon operator. How functions map over vectors. Functions to summarize a vector: sum, mean, sd, median etc. Extracting a subset from the vector (by index, by property).

**MODULE II: Correlation analysis and Visualization techniques using R**

**(15 Hrs)**

Matrices - Constructing matrix objects, accessing matrix elements, naming the rows and columns of a matrix, reading a particular item from the matrix, matrix properties and matrix arithmetic. Data frames - Creating a data frame, summary of data frames, various data frames in R, summary for built in data frames. Introduction to plotting. plot(), lines(), abline(). No details about the graphics parameters except colour and line width. Performing correlation and regression analysis using R, interpreting results from correlation and regression analysis. Pie charts, Histograms, Box plots, Scatter plots.

**Mode of Evaluation: Test – 02 & Assignment – 02 (Each Module)**