**Certificate Course**

**Course Name: Application of Statistical Science Across Disciplines Using Statistical Softwares**

**Eligibility Criteria for Admission:** Passed 10+2 or equivalent examination with Statistics/ Mathematics in any stream having minimum 50% marks or equivalent grade in aggregate.

Course Starting Date: **09.04.2024**

**Detailed course Structure**

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| **Course Code** | **:** |  |
| **Course Title** | **:** | **Application of Statistical Science Across Disciplines Using Statistical Softwares** |
| **Number of Credits** | **:** | **3 (L: 2, T:1, P:0)** |
| **Course Category** | **:** | **Certificate Course** |

**Course Objectives:** The objectives of the course is to equip students with practical knowledge in statistics so that they can independently carry out statistical analysis and prepare reports based thereon for the benefits for the government and non-government organization. The course will provide training to the students on important statistical concepts like measures of central value, measures of dispersion, correlation, linear regression along with testing of hypothesis.

**Course Content**

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| **Unit**  | **Content**  | **Hours** |
| **I** | Measures of Central Tendency, Measures of Variability, Skewness and Kurtosis. | 10 |
| **II** | Testing of Hypothesis: t: test- one sample, two samples and paired, $Chi$-Square test, One way Analysis of Variance.Measure of Associations: Correlation and Simple Linear Regression. | 10 |
| **III** | **R and R Studio**: Basic Introduction, Installing R and Setting up the R Studio environment, Basic R Syntax and Commands, Data types, Vectors and Data frames in R, Basic Operations on Data in R, Descriptive Analysis and Testing of Hypothesis.**SPSS**: Basic Introduction, Descriptive Analysis and Testing of Hypothesis. | 15 |

Texts/References

1. Teetor, P. (2011). *R cookbook: Proven recipes for data analysis, statistics, and graphics*. " O'Reilly Media, Inc.".
2. Davies, T. M. (2016). *The book of R: a first course in programming and statistics*. No Starch Press.
3. Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.
4. Cronk, B. C. (2017). *How to use SPSS®: A step-by-step guide to analysis and interpretation*. Routledge.

E- Learning Resources:

1. <https://a-little-book-of-r-for-time-series.readthedocs.io/en/latest/>
2. <https://www.open.edu/openlearn/society-politics-law/sociology/getting-started-spss/content-section-0?active-tab=description-tab>

**Course Outcomes:** After successful completion of the course, the students will be able to:

1. Summarize data using central tendency, variability and skewness and Kurtosis.
2. Find the relationship between two variables and model it by using linear regression.
3. Test the Hypothesis of significance of sample mean for single sample, two sample and paired samples.
4. Use softwares R and SPSS for data analysis.