



Integrated B. Sc. – M. Sc. In Applied Statistics (Faculty of Science)
(B. Sc.) (Applied Statistics) First Year Semester (II)

Course Code	IS02CAST51	Title of the Course	DESCRIPTIVE STATISTICS FOR BIVARIATE DATA II
Total Credits of the Course	02	Hours per Week	02

Course Objectives:	<ol style="list-style-type: none">1. To understand the two-dimensional data in scientific fields2. To summarize and derive tangible information contained in the two-dimensional inter-related and time related scientific data
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Course Content		
Unit	Description	Weightage* (%)
I	Introduction of bivariate data: Causal relationship. Scatter plot, linear and curvilinear correlation. Correlation: definition, coefficients: Karl Pearson, bi-serial, Spearman's rank correlation (for qualitative and quantitative data), and properties. Regression: regression lines, properties of regression coefficients, fitting of regression lines using method of least squares. Coefficient of determination (square of simple correlation coefficient) and prediction. Measure of association between two attributes and odds ratio.	60
II	Introduction to time series data and examples. Components of time series: trend, seasonal, cyclical and irregular. Multiplicative and additive models. Trend: methods of fitting a straight line. Seasonal variation: methods of finding seasonal variation, de-seasonalization and seasonal index. Cyclic variation: methods of finding cyclic variation.	40

Teaching-Learning Methodology	Interactive Class Lectures, ICT Tools, hand on experience in problem solving through practical sessions.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage





1.	Internal Written / Practical Examination	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Attendance	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to

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| 1. | Present original data in tabular, diagrammatical and graphical form based on the data types |
| 2. | Quantify the measures of central tendency (location), dispersion (spread), skewness and kurtosis (shape related) and relate them with data |
| 3. | Calculate quantiles and relate it with different characteristics of data |

Suggested Text Books/ References:

Sr. No.	Text Books
1.	B. L. Agarwal (2003). Programmed STATISTICS (Questions – Answers). New Age International Publishers. Chap. 13, 14, 16.
2.	D. Bhattacharya and S. Roychowdhury (2019 reprint). STATISTICS, Theory and Practice, 3 rd Ed., U.N. Dhur & Sons Pvt. Ltd., Kolkata. Chap. 8-9.
3.	D. freedman, R. Pisani, R. Purves (2017 reprint). Statistics, 4 th Ed., Viva Books, Kolkata. Chap. 8-12.
4.	Goon, A.M., Gupta, M. K. and Dasgupta, B. (2002). Fundamental of Statistics, Vol. I, 8 th Ed., The World Press, Kolkata. Chap. 11-12, 14.
	Reference Books
5.	Bilal, M. A. And Richard, H. M. (2015). Probability, Statistics, and reliability for Engineers and Scientists, 3 rd Ed. Special Indian Ed., CRC Press. Chap. 12.
6.	J. McClave and T. Sincich (2018). Statistics, 13 th Ed., Pearson, NY. Chap. 2, 11.
7.	A. Anderson and D. Semmerlroth (2015). Statistics for Big Data for Dummies: A Wiley Brand. John Wiley & Sons. Chap 15-16.

