MASTER OF SCIENCE IN QUALITY & PRODUCTIVITY MANAGEMENT
M. Sc. QPM, Semester – I

Course Code	PS01CQPM51	Title of the Course	Business Statistics and Information systems
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. Familiarize the student with common statistical practices and the basic concepts of different statistical methodologies. 2. Equip the student with tools meant to address, evaluate and interpret business problems as statistical problems and communicate their conclusions effectively. 3. Construct a disciplinary foundation of statistics in the student, so as to enable them to grasp advanced statistical methodologies quickly and efficiently.

Course Content

Unit	Description	Weightage (in %)
I	Types of Data: Concepts of a statistical population and sample from a population; qualitative and quantitative data; nominal and ordinal data; cross sectional and time series data; discrete and continuous data; frequency and non- frequency data. Different types of scales - nominal, ordinal, ratio and interval. Diagrammatic and graphical representation of grouped data. Frequency distributions, cumulative frequency distributions and their graphical representation, histogram, frequency polygon and ogives.	25
II	Measures of central tendency: Criteria for good measures of central tendency, Arithmetic Mean, Geometric Mean and Harmonic Mean, Median and Mode for raw and grouped data. Quantiles, Deciles and Percentiles for row and grouped data. Measures of Dispersion: Concept of dispersion, Absolute and relative measure of dispersion, Range, absolute mean deviation, variance, standard deviation, coefficient of variation, Quartile Deviation, Coefficient of quartile deviation.	25
III	Probability: Deterministic and Random Experiments. Simple and Compound Events, Sample Space. Union and Intersection of events, mutually exclusive events, Mathematical and Statistical Definition of Probability, Some important results on probability, Null and Sure Event, Independent Events. Conditional Probability, Bayes' Theorem. Probability Distribution: Bernoulli, Binomial, Geometric and	25

	Negative Binomial and Poisson distribution and their important properties. Normal and Exponential Distribution and their properties.	
IV	Correlation: Concept of correlation, positive & negative correlation, Scatter Diagram, Karl Pearson's Coefficient of correlation and its properties. Coefficient of determination Regression: Concepts of error in regression, Fitting of linear regression Testing of hypotheses: Definition of null and alternative hypotheses; two type errors, level significance and p-value. One sample problem: Z, t and chi-square tests. Two sample problem: F-test, Independent sample t-test and paired t-test.	25

Teaching-Learning Methodology	Interactive Class Lectures, ICT tools used

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Know and understand the different types of data and manage raw data effectively.
2.	Construct visual representations of statistical data with general appropriation.
3.	the notion of probability and random variables. Understand the concepts of conditional probability and the Bayes' Theorem.
4.	concept of simple linear regression, its fit, and evaluate regression coefficients, along with subsequent metrics like the coefficient of determination and standard error.

5.	concepts of the null and the alternative hypotheses, level of significance, p-value, etc. Understand and construct exact tests of statistical hypotheses based on normal sample observations.

Suggested References:

Sr. No.	References
1.	G. V. Shenoy and U. K. Srivastave (1988) *Business Statistics*, New Age International.
2.	Douglas Downing and Jeffrey Clark (2010) *Business Statistics*, Barron's Educational Series.
3.	David R Anderson, Dennis J. Sweeney, Thomas A. Williams (2008) *Essentials of Statistics for Business and Economics*, Cengage Learning.
4.	Donald Waters (2011) *Quantitative Methods for Business*, Pearson.
5.	Richard Levin and David Rubin (1997) *Statistics for Management*, 7th Ed., Pearson.
6.	John Buglear (2011*) Quantitative Methods for Business and Management*, Pearson.
7.	B L Agarwal (2006) *Basic Statistics*, New Age International.

On-line resources to be used if available as reference material
On-line Resources

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