

QUANTITATIVE METHODS – 1 (Mathematics & Descriptive Statistics)

[MB-105]

Credits : 4

**Module I (Mathematics)**

1. Set theory – Concepts and business applications [3L]
2. Functions – basic concepts, different types and applications [2L]
3. Derivatives (single variable) – basic working rules; applications to optimization problems and curve sketching [5L]
4. Partial derivatives – basic working rules and applications to optimization [2L]
5. Constrained optimization – use and interpretation of the Lagrange multiplier [2L]
6. Fundamentals of convexity and concavity and idea about their usage [2L]
7. Concept of integration and working rules; application to business and economic problems [4L]
8. Matrices and their applications [2L]
9. Combinatorics – Principles of counting; Permutations and Combinations; Inclusion-Exclusion principle [3L]
10. Probability and its applications in business and economics [3L]

**Module II (Descriptive Statistics)**

1. Scope, functions and limitations of statistics [1L]
2. Collection and presentation of data – Tabular and diagrammatic representation, Frequency distribution, relative frequency, cumulative frequency; Bar graphs and pie charts; Histogram, Ogive. [2L]
3. Measures of Central tendency – Mean, Median, Mode, Percentiles, Quartiles [2L]
4. Measures of Dispersion – Range, Interquartile range, Mean deviation, Mean Absolute deviation, Standard deviation, Variance, Coefficient of Variation. [3L]
5. Measures of shape and relative location; Skewness and Kurtosis; Chebyshev's Theorem [1L]
6. Simple correlation and regression analysis [3L]

**Suggested Readings**

Aczel – Complete Business Statistics (6th edition); TMH  
Anderson, Sweeny and Williams – Statistics for Business and Economics (9th edition); Thomson Learning  
Anthony, M. and Biggs, N. – Mathematics for Economics and Finance: Methods and Modeling; CUP  
Dowling, E.T. – Introduction to Mathematical Economics; Schaum's Outline Series  
Hoy Michael et.al. - Mathematics for Economics(2nd edition); PHI  
Raghavachari, M– Mathematics for Management; TMH  
Sharma, J.K - Business Statistics, Pearson Education.