

VEER NARMAD SOUTH GUJARAT UNIVERSITY  
F.Y. B.COM (External) Syllabus  
MATHEMATICS FOR STATISTICS  
**(External Programme)**  
(With Effect from Academic Year 2014-2015)

UNIT-I: (25%)

**Calculus:**

**Limit and continuity;**

Limit of function, meaning of  $x \rightarrow \alpha$ ,  $x \rightarrow \infty$ ,  $x \rightarrow 0$  and definition of  $\lim_{x \rightarrow \alpha} f(x)$ .

Proof of standard forms and illustrations, continuity of a function, where  $f(x)$  is a polynomial of  $x$  and ratio of two polynomials in  $x$ , D hospital rule for finding a limit of a function.

**Differentiation:**

Definition of derivative of a function. Rule of derivative. Derivative of a function such as,  $x^n$ ,  $a^x$ ,  $e^x$ ,  $\log x$ . Condition for existence of maxima and minima of function and its applications to problems related to business, commerce and economic. Chains rules of differentiation. Derivative of parametrics function, composit function, partial differentiation.

**Integration:**

Meaning, Different standard forms, Integration by parts, Method of substitution integration by parts, Definite intergral, Rules for evaluation of definite integrals.

UNIT-II: (25%)

**Progression:**

Sequence, arithmetics, geometrics and harmonic progression. Definition of  $n$ th term and the sum of the first  $n$  terms. Determination of sum of squares, cubes the first  $n$  terms. Relation between A.M., G.M., and H.M.

**Co-ordinate Geometry:**

i) Point:

Distance between two points, Division of a line segment, Co-ordinates of the points which divide the line joining two given points  $P(x_1, y_1)$  and  $Q(x_2, y_2)$  internally and externally in the ratio  $m_1, m_2$

ii) Straight Line:

Slope of a Straight line, intercepts of a line, procedure of obtaining different forms of Straight line.

UNIT-III: (25%)

**i) Probability :**

Definition, Classical and relative frequency approach to probability, laws of probability, conditional probability and Bayes theorem with proof for two mutually exclusive probability and its applications.

**ii) Expectation and Moments:**

Definition of discrete random variable, Continuous random variable, Expectation of a random variable and its properties, Moments, co-efficient of kurtosis, M.G.F. and it's properties.

UNIT-IV: (25%)

**i) Standard univariate distributions:**

Binomial, Poisson distributions and their properties, M.G.F., Obtaining mean and variance, and their uses.

Standard univariate distribution

Normal distribution and their properties, M.G.F. and Obtaining mean and variance and its uses.

**Books :**

Pavale & Bhagwat	: The Element Calculus, Popular Prakshan, Bombay
Patel A.G. & Patel G.C.	: Business Mathematics, Atul Prakashan, Ahd.
Gupta S.P.	: Statistical Methods : S.chand & Co., New Delhi.
Gupta S.C.	: Fundamental of mathematical statistics : sultan chand & sons,
Shah H.D.	: Ganitik Ankada Shastra : Granth Nirman Board, Ahd.
Lewis J.P.	: An Introduction to mathematics : Mac millon