

**GUJARAT UNIVERSITY**  
**B. COM. (HONS)**  
**SEMESTER –II (MAJOR)**  
**MATHEMATICAL STATISTICS- I**  
**COURSE CODE: DSC-C STA 122**  
**CREDIT MARK DISTRIBUTION – 04**  
**AS PER NEP 2020 (To be effective from June 2023)**

**Lecture 04 Hours**  
**Tutorial – 00**  
**Practicum – 00**

**1. Course Code & Title**

<b>Course Title : Bachelor of Commerce</b>	
<b>Course Code : DSC-C STA 122</b>	<b>No. of Credits : 04</b>

**2. Course Overview & Course Objectives**

<p><b>Course Overview/ Course Description</b>  This course offers students the knowledge about basic mathematical techniques. This knowledge is necessary for the commerce students. This knowledge they can also apply and verify in other subjects like economics, management, etc. and for the professional and higher studies this course is must.</p>
<p><b>Course Objectives</b></p> <ol style="list-style-type: none"> <li>1. To understands the basic knowledge of the current business and industrial environment and to get acquainted for its translation in to mathematical form.</li> <li>2. To give basic knowledge of techniques of calculus.</li> <li>3. To make them aware of importance of applied mathematical methods</li> <li>4. To make students familiar with relation between formulation and solution of problem.</li> </ol>

**3. Course Content**

Unit	Topics	Content/ Fundamental Concepts	Unit Wise SLO
1.	<b>Function, Limit and Continuity</b>	<p><b>A. IKS</b>  What is Calculus? History of Calculus. Indian contribution to Calculus.</p> <p><b>B.</b> Concept of a function of single variable (linear, quadratic and exponential function only) Domain, co-domain and range of a function, Concept of real function, Application of function to cost, demand, revenue, profit function, break-even point,</p>	Understanding formulation of real life problems and convert it in to functional form and solving them. Also to learn basic concept of limit and continuity.

		<p>Concept and definition of limit of a function, meaning of <math>x \rightarrow 0</math>, <math>x \rightarrow a</math>, <math>x \rightarrow \infty</math>. Limit of a function by using tabular method. Basic rules of limit, Simple examples on it and examples where <math>f(x)</math> is in a polynomial or rational function of two polynomials.</p> <p>Meaning and definition of Continuity of <math>f(x)</math>, where <math>f(x)</math> is a polynomial of <math>x</math>, rational function of 'two polynomials of <math>x</math>.</p>	
2.	<b>Differentiation</b>	<p>Definition of a differentiation, Derivative of functions <math>\frac{1}{x}</math>, <math>\sqrt{x}</math>, <math>a x + b</math>, <math>a x^2 + b x + c</math> by using definition, Rules of derivatives - addition, subtraction, multiplication, division and chain rule (without proof) and their examples by using the standard functions in the form <math>x^n</math>, <math>a^x</math>, <math>\log x</math>, <math>e^{ax}</math>.</p>	<p>Extending knowledge of calculus in terms of differentiation as a basic need to understand its application in various fields of commerce.</p>
3.	<b>Application of Differentiation</b>	<p>Definition of second order derivative, meaning and definitions of maximum and minimum value of a function and its application in business - cost, revenue, monopoly and profit related numerical problems. Application of derivatives in economics - elasticity of demand and supply and its interpretations, simple numeric examples related to it, meaning and definitions of M.R., A.R., M.C. and A.C. relation between <math>\eta</math>, A.R. and M.R. and its related examples.</p>	<p>Extending the application of derivatives in business and in economics.</p>
4.	<b>Matrix Algebra</b>	<p>Definition of Matrix, Different Types of Matrices, Addition, Subtraction and Multiplication of Matrices and related examples. Determinant of Square Matrix (up to order <math>3 \times 3</math>). Adjoint of Matrix and Inverse of a square Matrix (up to order <math>3 \times 3</math>). Solution of Simultaneous linear Equations systems with the help of Inverse Matrix (up to 3 variables) and related examples</p>	<p>Learning the basics of matrix and its application in business problems</p>

#### 4. Course Learning Outcomes/Students' Learning Outcomes (SLO)

<b>Course Learning Outcomes</b>
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1. This course helps to get feel of real life business problem and its conversion into functional forms.
2. This course gives basic knowledge of techniques of calculus which is useful to them for higher studies.
3. This course creates the knowledge about the application of derivatives in business and in economics.
4. Students get familiarity with the Learning the basics of matrix and its application in business problems

## 5. MODE OF EVALUATION

Evaluation will be divided in two parts:

- **Semester End Evaluation (SEE):** Semester End Examination will be conducted by the Gujarat University of 50 Marks
- **Continuous and Comprehensive Evaluation (CCE):** Continuous and Comprehensive Evaluation of 50 marks will be decided by the colleges / Institutes / University departments as per the instruction given by the University time to time

## 6. Recommended learning Resources

1. Kapoor V. K.: Business Mathematics; Sultan Chand & Sons, New Delhi.
2. J. K. Sharma, Business Statistics, Pearson Education, New Delhi.
3. Sancheti & Kapoor, Business Statistics, Sultan Chand & Sons, New Delhi.
4. Trivedi and Trivedi: Business Mathematics, Pearson India Ltd. New Delhi.

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