



**CS-06: MATHEMATICAL AND STATISTICAL FOUNDATION OF COMPUTER SCIENCE**

**Objectives:**

- To create awareness of about basic Mathematics and Statistics
- To develop Reasoning ability, Logical ability and Arithmetic ability
- To develop a positive attitude towards learning Mathematics & statistics
- To perform mathematical & statistical operations and manipulations with confidence, speed and accuracy.

**Prerequisites:**

- Basic knowledge of Mathematics and Statistics

Unit No.	Topic	Details
<b>1</b>	<b>Determinants</b>	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• <math>2 \times 2</math>, <math>3 \times 3</math> order determinant</li> <li>• Cramer's method for solving linear equation (Two and Three Variables)</li> <li>• Properties of Determinants</li> <li>• Examples</li> </ul>
	<b>Matrices</b>	<ul style="list-style-type: none"> <li>• Introduction</li> <li>• Different types of matrix(square matrix, column matrix, row matrix, Diagonal matrix, Unit matrix, null matrix)</li> <li>• Transpose of matrix</li> <li>• Addition, subtraction &amp; multiplication of two matrices</li> <li>• Adjoint of a square matrix</li> <li>• Inverse of matrix</li> </ul>
<b>2</b>	<b>Measures of Central Tendency &amp; Dispersion</b>	<ul style="list-style-type: none"> <li>• Mean (ungroup data, group data)</li> <li>• Median (ungroup data, group data)</li> <li>• Mode (ungroup data, group data)</li> <li>• Range</li> <li>• Quartiles</li> <li>• Standard Deviation</li> <li>• Typical examples</li> </ul>
<b>3</b>	<b>Arithmetic &amp; Geometric progression</b>	<ul style="list-style-type: none"> <li>• Sequence</li> <li>• Series</li> <li>• Arithmetic progression (Definition &amp; Nth term, sum of n terms)</li> <li>• Geometric progression (Definition &amp; Nth term, sum of n terms)</li> <li>• Harmonic Progression</li> <li>• Relation Between AM GM HM (Two Numbers)</li> <li>• Typical examples</li> </ul>



**B.C.A. (Honours) & B.C.A. (Honours with Research)**  
**(Semester - 1 and Semester - 2)**  
**Saurashtra University**  
**To be effective from June – 2023**

Student Seminar – 5 Lectures  
Expert Talk – 5 Lectures  
Student Test – 5 Lectures  
**Total Lectures 30 + 15 = 45**

**Course Outcome:**

- Able to Understand basics of Mathematics and Statistics
- Able to Develop reasoning ability, logical ability and arithmetic ability
- Able to Develop a positive attitude towards learning Mathematics & statistics
- Able to Perform mathematical & statistical operations and manipulations with accuracy.

**Reference Books:**

1. Business Mathematics By Sancheti & Kapoor Sultan & Chand
2. Statistical Method By Gupta Sultan & Chand
3. Discrete Mathematical Structures with Applications to Computer Science By J.P. Tremblay & R. Manohar TMH
4. Business Mathematics : V.K. Kapoor
5. Business Mathematics : Dr Kachot
6. Fundamentals of Statistics : S. C. Gupta