GUJARAT UNIVERSITY
B. COM. (HONS)
SEMESTER – III
Mathematical Statistics II
COURSE CODE – DSC C STA 231
CREDIT MARK DISTRIBUTION – 04
AS PER NEP 2020 (To be effective from June 2024)

Lecture 04 Hours

Tutorial – 00

Practical – 00

COURSE OBJECTIVES

The course aims to introduce students to essential mathematical concepts and techniques relevant to integration, coordinate geometry, arithmetic progression, and geometric progression. It focuses on understanding foundational principles and their applications in various fields

PRE – REQUISITE

➢ To effectively grasp Mathematical Statistics, a prerequisite understanding includes algebraic manipulation, equations, and inequalities; familiarity with functions such as polynomial, rational, exponential, logarithmic, and trigonometric functions; proficiency in solving equations and inequalities involving these functions; a solid grasp of integration concepts encompassing definite integrals, their properties, and applications in geometric calculations and physics; competence in Cartesian coordinate geometry, encompassing lines, circles, parabolas, ellipses, and hyperbolas; and a thorough understanding of arithmetic and geometric progressions, covering formulas for nth terms, sums of terms, and practical applications in sequences and series problems.

CO – REQUISITE

➢ The learner should have basic understanding of mathematics and logical thinking.

COURSE OUTCOMES

➢ Understand the meaning and application of definite integration.

➢ Apply integration rules, including constants, addition, subtraction, and integration by parts, to solve mathematical problems.

➢ Solve business-related problems using definite integration, focusing on marginal revenue, marginal cost, and profit functions.

➢ Explain and utilize coordinate geometry concepts such as slope, intercept, and equations of lines in different forms.

➤ Apply arithmetic progression and geometric progression formulas to find nth terms and sums, and solve related problems. Define arithmetic mean and geometric mean, and apply their formulas in practical scenarios.

UNIT	CONTENT	WEIGHTAGE
1	**INTRODUCTION TO INTEGRATION** ➤ Meaning and definition of definite integration ➤ Rules of integration - constant, addition, subtraction and integration by parts ➤ Standard integration forms of the type - $\left(X^n, e^{ax+b}, a^x, \frac{1}{x}, (ax+b)^n, \frac{1}{(ax+b)}\right)$ ➤ Simple examples based on these results	**25%**
2	**DEFINITE INTEGRATION AND APPLICATION OF INTEGRATION** ➤ Meaning and definition of definite integrations ➤ it's simple application in business and related to M.R., M.C. and profit function only, with simple examples	**25%**
3	**CO-ORDINATE GEOMETRY** ➤ Definition of slope, intercept, conditions for parallel and perpendicular lines ➤ equation of a straight line in the following forms: $(1)\ y = mx + c$ $(2)\ y - y_1 = m(x - x_1)$ $(3)\ \dfrac{y - y_1}{y_1 - y_2} = \dfrac{x - x_1}{x_1 - x_2}$ $(4)\ \dfrac{x}{a} + \dfrac{y}{b} = 1$	**25%**
4	**ARITHMETIC PROGRESSION AND GEOMETRIC PROGRESSION** ➤ Meaning and definition of series and sequence ➤ Introduction of arithmetic progression ➤ Formula for finding nth term and for sum of first n terms and various examples based on it ➤ Definition of Geometric progression, formula for finding nth term and sum of n terms and infinite geometric progression ➤ various types of examples	**25%**

	> Definitions of arithmetic mean, geometric mean and its formulae > Application based examples are expected	

Pedagogical Tools:

- Classroom Lectures and discussion
- Problem Solving
- Tutorial
- Group Discussion
- Seminar
- Assignments

MODE OF EVALUATION:

Evaluation will be divided in two parts.

- **External:** Semester end Examination will be conducted by the Gujarat University of 50 Marks
- **Internal:** Internal Evaluation of 50 marks will be decided by the colleges / Institutes/ University departments as per the instruction given by the University time to time.

FBLD (Flip Blended Learning Design Template)

- Any One Unit from the above syllabus can be discussed by the faculty through online mode.
- Online mode can be SWAYAM MOOC Course or any other suggested by the UGC or Gujarat University.

REFERENCE BOOKS:

1. Goel, A & Goel, A. (2002) Mathematics and Statistics (2nd Edition). Taxmann.
2. Thukral, J. K.(2006). Mathematics for CA professional Education (course-I). Taxmann.
3. Anton, H., Bivens, I., & Davis, S. (2013). Calculus: Early Transcendentals (10th ed.). Wiley.
4. Thomas, G. B., Weir, M. D., Hass, J., & Giordano, F. R. (2017). Thomas' Calculus (14th ed.). Pearson.
5. Stroud, K. A., & Booth, D. J. (2013). Engineering Mathematics (7th ed.). Palgrave Macmillan.
6. Sharma, J. K. (2015). Coordinate Geometry (2nd ed.). Arihant Publications.
7. Goyal, S. P. (2009). A Textbook of Coordinate Geometry for JEE Main & Advanced (1st ed.). Arihant Publications.
8. Grewal, B. S. (2007). Higher Engineering Mathematics (40th ed.). Khanna Publishers.