SES'S L. S. RAHEJA COLLEGE OF ARTS AND COMMERCE

(AUTONOMOUS)

Syllabus of Mathematical and Statistical Techniques-II under NEP 2020 vertical (OE) with effect from 2024-25

Programme: Bachelor of Commerce

Department of Mathematics, Statistics and Computer

HoD/Sr. Person of the Department: Dr. Seema Ukidve

Date of approval by the BoS:24/04/2024

Approved by the Academic Council: 29/04/2024

Approved by the Governing Body: 06/05/2024

Program: Bachelor of Commerce					Semester: II	
Course: Course: Mathematical and Statistical techniques-II **Academic Year: 2024-2025** **Batch: 2024-2027**					Code: UGBCOMIIOE324	

Teaching Scheme				Evaluation Scheme	
Lectures	**Practicals**	**Tutorials**	**Credits**	**Internal Continuous Assessment (ICA) (weightage)**	**Term End Examination (TEE) (weightage)**
30	Nil	Nil	02	20 Marks	30 Marks

Internal Component		
Class Test (Duration 30 Mins)	**Presentation**	**Class Participation**
10	5	5

Learning Objectives:
- To provide an overview to the students with the basic concepts involved in Mathematics and Statistics.
- To apply the basics of Mathematical skills which are imperative in Economics and Management.
- To provide an overview to the students with the basic concepts involved in Statistics.
- To apply the basics of Statistical skills which are imperative in Economics and Management.

- To take well informed decisions in predictable and uncertain situations

Course Outcomes: After completion of the course, students would be able to:

- Illustrate the basic concepts of Share Market and Mutual Funds.
- Illustrate the knowledge of Maxima, Minima and applications in Economics.
- To understand the various issues involved in the collection, analysis and arriving at conclusive Decisions regarding quantitative data.
- To understand the various issues involved in the collection, analysis and arriving at conclusive.
- Decisions regarding quantitative data.
- To understand and appreciate the practical relevance of various basic statistical tools in the Field of finance and economics.

Pedagogy: The objective of the course is to encourage students to learn and appreciate the use of the various tools of Mathematics and Statistical Techniques with regard to scientific management in businesses. Hence,

- Adaptive teaching methods.

- To invoke Computational thinking in problem solving.

- Classroom session with applications in MS-excel in Lecture.

- Students would be given project/field work for better understanding of the concepts.

Detailed Syllabus: (per session plan)
Session Outline for Mathematical and Statistical Techniques II **Each lecture session would be of one hour duration (30 Sessions)**

Module	Module Content	Module Wise Pedagogy Used	Module Wise Duration
I	**Interest and Annuity** **Interest:** Simple interest, compound interest (nominal and effective rate of interest). Calculation involving up to four times periods. **Annuity:** Annuity immediate and its present value, future value, equated monthly instalments (EMI), using reducing balance method and amortization of loans, stated annual rate and effective annual rate, perpetuality and its present value, simple problems involving up to 4 time periods	Classroom sessions with adaptive methods & computational thinking	7+8
II	**Probability** **a. Probability Theory** Concept of random experiment/trial and possible outcomes; Sample Space and Discrete Sample Space; Events their types, Algebra of Events, Mutually Exclusive and Exhaustive Events, Complimentary events. i) Definition of Probability, Addition theorem (without proof), conditional probability. ii) Independence of Events: $P(A \cap B) = P(A) P(B)$. Simple examples iii)Bayes Theorem with examples. **Time series and Index number** **Time series**: Concept and components of time series. Estimation of trend by moving average method and least square method. Estimation of seasonal component by simple A.M. method **Index number:** Concept of index numbers. Type of index number. Aggregative and price relative method. Lampreys, Paasche, Fisher, Dorbish-Bowley and Marshall-Edgeworth index number. Chain base index number. Use of Excel in solving problems	Classroom sessions with computational thinking	4+5+6

Reference Books:

- Statistics for management Richard Levin, David S. Rubin, Sanjay Rastogi /Masoos Husain siddiqui. Pearson.

- *M. P. Chaudhary, Advanced Applied Mathematics*, Piyush Book Publication Pvt. Ltd. New Delhi, India, **2003**.ISBN:81-86548-64-5.

- Introduction to Probability and Statistics for Engineers and Scientists by Sheldon M. Ross

- Operations Research - An Introduction - By Hamdy A. Taha

- Introduction to Operations Research by Frederick S. Hillier, Gerald J. Lieberman and Bodhibrata Nag

QUESTION PAPER PATTERN

Details of Internal Continuous Assessment (ICA)   **Internal Marks:** 20   • 1 Internal Test of 10 marks will be conducted.   • 1 Assignment of 10 Marks will be given.
Term End Examination Question Paper Pattern Total Marks: 30   Q1 Answer any **three** out of the following Four questions (based on Module I)   5*3=15   Q2 Answer any **three** out of the following Four questions (Based on Module II)   5*3=15