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| **Program: Bachelor of Commerce (Economics and Analytics)** | **Semester: I** |
| **Course : Course : Business Mathematics****Academic Year: 2023-2024**  |  | **Code:** |
| **Teaching Scheme** | **Evaluation Scheme** |
| **Lectures** | **Practicals** | **Tutorials** | **Credits** | **Internal Continuous Assessment (ICA)****(weightage)** | **Term End Examinations (TEE)****(weightage)** |
| **30** | **Nil** | **Nil** | **02** | **20 Marks** | **30 Marks** |
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| **Internal Component** |
| **Class Test (Duration 30 Mins)** | **Projects / Assignments** | **Class Participation** |
| **10 Marks** | **10 Marks** | **-** |

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| **Learning Objectives :**1. To provide an overview to the students with the basic concepts involved in Mathematics.
2. To apply the basics of Mathematical skills which are imperative in Economics and Management.
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| **Learning Outcomes :** After completion of the course, students would be able to:1. Illustrate the basic concepts of Share Market and Mutual Funds.
2. Illustrate the knowledge of Maxima, Minima and applications in Economics
3. To understand the various issues involved in the collection, analysis and arriving at conclusive

 Decisions regarding quantitative data. |
| **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,1. Adaptive teaching methods.
2. To invoke Computational thinking in problem solving.
3. Classroom session with applications in MS-excel in Tutorial Lecture.
4. Students would be given project/field work for better understanding of the concepts.
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| **Detailed Syllabus: ( per session plan )****Session Outline For Business Mathematics****Each lecture session would be of one hour duration (30 sessions)** |

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| **Module** | **Module Content** | **Module Wise Pedagogy Used** | **Module Wise****Duration** | **Module Wise Reference Books** |
| I | **Shares and Mutual Funds**1. **Shares**: Concept of share, face value, market value, dividend, equity shares,

Preferential shares, bonus shares, Right issue of Share, Split and Consolidation.b. **Mutual Funds**: types of Mutual funds, Simple problems on calculation of Net income after considering entry load, dividend, change in Net Asset Value (N.A.V.) and exit load. Averaging of price under the Systematic Investment Plan (S.I.P.) systematic withdrawal plan (S.W.P.). | Classroom sessions with computational thinking. | 7+8 | 1.Financial Mathematics by Prarthana Shahi.(Ane’s Student Edition)2.Business mathematics and statistics by V.R.Nikam (Chandralok Prakashan) |
| II | **Derivative of functions and Applications :**1. **Functions:** Introduction to functions and Types of Functions: Explicit, Implicit, Single valued, Multi valued, constant, polynomial, Exponential and logarithmic (concepts only) Functions in Economics: Demand function, Supply Function, Cost Function, Total Revenue function, Profit Function
2. **Derivatives:** Derivatives as rate Measure: Derivatives of $xn, ex, ax, log x .$ Rules of differentiation: Scalar multiplication, Sum, difference, product, Quotient and chain rule (statement only) simple problems. Problems on parametric, taking log on both sides not included.
3. **Applications of Derivatives concerning only economic applications:**

Marginal Cost, Marginal Revenue, Elasticity of Demand, Maxima and Minima for functions in Economics and Commerce. (Examination Questions on this unit should be application oriented only.) | Classroom sessions with adaptive methods & computational thinking | 3+7+5 | 1. Business Mathematics D.C.Sancheti and V.K.Kapoor.(Sultan Chand & Sons.2.Mathematics for business economics by J.D. Gupta, P.K.Gupta and Man Mohan |
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| **Reference Books:**

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| **Title** | **Author(s)** | **Publisher** |
| Business Mathematics | D. C. Sancheti and V. K. Kapoor | Sultan Chand & Sons, 2006, |
| Mathematics for Business Economics: | J. D. Gupta, P. K. Gupta and Man Mohan, | Tata Mc‐ Graw Hill Publishing Co. Ltd., 1987 |
| Schaum Series STATISTICS | Murray Spiegel, Larry Stephens | Mc Graw Hill |
| Operations Research | Gupta and Kapoor | S. Chand & Sons Co. |
| Statistical Methods | S.G. Gupta | S. Chand & Sons Co. |
| Business Mathematics & Statistics | B Aggarwal | Ane Book Pvt. Limited |
| Statistics for management | Richard Levin, David S. Rubin, Sanjay Rastogi /Masoos Husain siddiqui. | Pearson |
| Mathematics & Statistics | Ajay Goel & Alka Goel. | Taxmann’s Publication |
| Quantitative Techniques of Decision Making | Anand Sharma | Himalaya Publishing House |
| Business Statistics Using Excel & SPSS | Nick Lee & Mike | SAGE |
| Business mathematics and statistics | V.R.Nikam | (Chandralok Prakashan) |

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#### Evaluation Pattern

The performance of the learner will be evaluated for 50 marks in two components. The first component will be a Continuous Assessment with a weightage of 40% of total marks per course. The second component will be a Semester end Examination with a weightage of 60% of the total marks per course. The allocation of marks for the Continuous Assessment and Semester end Examinations is as shown below:

#### a). Details of Continuous Assessment (CA)

40% of the total marks per course:

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| **Total Marks** | **External Component** | **Internal Component[ICA]** | **ICA Component** |
| **Internal test** | **Assignment** |
| 50 | 30 | 20 | 10 | 10 |
| 1] For 50 Marks-ICA Test Component-2 test of 10 marks, Average of the 2.2] Duration: 30 marks -1 hour, 10 marks-20 Minutes3]ICA Test-Offline |

**Term End Examination Question Paper Pattern**

**Total Marks: 30**

Q1 Answer any **two** out of the following Three questions (based on Module I) 5\*2=10

Q2 Answer any **two** out of the following Three questions (Based on Module II)  5\*2=10

Q3 Answer any **two** out of the following Three questions ( Based on Both Module I&II) 5\*2=10

**Prepared by:**

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