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| **Course code** | |  | **B.Sc Statistics** | | **L** | **T** | | **P** | **C** |
| **Core/Elective/Supportive** | | | ALLIED SUBJECT: MATHEMATICS FOR STATISTICS – PAPER I | | **7** | **-** | | **-** | **4** |
| **Pre-requisite** | | | **For the students admitted from the academic year 2025-2026 and onwards)** | | **Syllabus Version** | | **2025**  **- 2026** | | |
| **Course Objectives:** | | | | | | | | | |
| To enable the students to learn Matrices, calculus , series and sequences | | | | | | | | | |
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| **Expected Course Outcomes:** | | | | | | | | | |
| On the successful completion of the course, student will be able to: | | | | | | | | | |
| 1 | Understand the basic concepts of arithmetic and geometric series and. | | | | | | K1 | | |
| 2 | To remember the methods for solving system of simultaneous linear equations | | | | | | K2 | | |
| 3 | Know the basic concepts of differentiation and integration | | | | | | K3 | | |
| 4 | Aware of variables, constants and functions and evaluate the first and second order derivatives. | | | | | | K3 | | |
| 5 | To gain knowledge on integral calculus and determining definite and indefinite functions. | | | | | | K4 | | |
| **K1** - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create | | | | | | | | | |
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| **Unit:1** | | **MATRICES AND DETERMINANTS** | | | **18 hours** | | | | |
| Definitionof matrices-order of matrix-types of matrices-matrix operations-addition, scalar multiplication, multiplication of matrices, transpose. Definition of Determinants and value of determinants of order 2 and 3-Adjoint and inverse of a matrix. | | | | | | | | | |
| **Unit:2** | | **SYSTEM OF LINEAR EQUATIONS** | | | **18 hours** | | | | |
| Solution of system of simultaneous linear equations by using inversion of matrix and Cramers rule methods. Rank of a matrix- Rank through elementary transformations-consistency and inconsistency of system of simultaneous linear equations. | | | | | | | | | |
| **Unit:3** | | **DIFFERENTIAL CALCLUS** | | **18 hours** | | | | | |
| Limit of a function-continuity of a function-concept of differentiation- Differentiation techniques- product rule- quotient rule- chain rule. Second order derivatives-Simple Problems | | | | | | | | | |
| **Unit:4** | | **INTEGRAL CALCLUS** | | **18 hours** | | | | | |
| Integration techniques: Integrals of f(x), f(ax+b), f(x)+g(x). Method of substitution- f’(x)/f(x), f’(x)[f”(x)], 1/(ax2+bx+c)- Integration by parts. Definite integrals – Simple problems. | | | | | | | | | |

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| **Unit:5** | | **SEQUENCE AND SERIES** | **18 hours** |
| Arithmetic and Geometric series-Problems | | | |
|  | | **Total Lecture hours** | **90 hours** |
| **Text Book(s)** | | | |
| 1 | Navanitham, P.A, “ Business Mathematics and Statistics”, Jai Publishers, Trichy-21 | | |
| **Reference Books** | | | |
| 1 | Sundaresan and Jayaseelan,”Introduction to Business Mathematics”,Sultanchand Co&Ltd,Newdelhi | | |
| 2 | G.K.Ranganath, C.S.Sampamgiram&Y.Rajan-A Text book Business Mathematics - Himalaya Publishing House. | | |
| **Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]** | | | |
| 1 | <https://www.youtube.com/watch?v=qO1SYFZVmhY> | | |
| 2 | [https://www.youtube.com/watch?v=LadYhkiVC7Q&list=PLRYPMG3pkUJuucxOLmnRC](https://www.youtube.com/watch?v=LadYhkiVC7Q&list=PLRYPMG3pkUJuucxOLmnRC-Lj3PmzVmKCD)  [-Lj3PmzVmKCD](https://www.youtube.com/watch?v=LadYhkiVC7Q&list=PLRYPMG3pkUJuucxOLmnRC-Lj3PmzVmKCD) | | |
| 3 | [https://www.youtube.com/watch?v=qO1SYFZVmhY&list=PLX2gX-](https://www.youtube.com/watch?v=qO1SYFZVmhY&list=PLX2gX-ftPVXUYjs2g3YiaY0sEfwW-jg5L) [ftPVXUYjs2g3YiaY0sEfwW-jg5L](https://www.youtube.com/watch?v=qO1SYFZVmhY&list=PLX2gX-ftPVXUYjs2g3YiaY0sEfwW-jg5L) | | |
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| Course Designed By: | | | |

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| **Cos** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** |
| **CO1** | S | M | M | S | S | S | S | M | S | S |
| **CO2** | S | M | M | M | S | S | S | M | M | S |
| **CO3** | S | M | S | S | S | S | S | S | S | S |
| **CO4** | S | M | S | S | S | S | S | S | S | S |
| **CO5** | S | S | S | S | S | S | S | S | S | S |

\*S-Strong; M-Medium; L-Low

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| **Course code** | |  | **B.Sc Statistics** | | **L** | **T** | | **P** | **C** |
| **Core/Elective/Supportive** | | | ALLIED SUBJECT: MATHEMATICS FOR STATISTICS – PAPER II | | **7** | **-** | | **-** | **4** |
| **Pre-requisite** | | | **For the students admitted from the academic year 2025-2026 and onwards)** | | **Syllabus Version** | | **2025**  **- 2026** | | |
| **Course Objectives:** | | | | | | | | | |
| To enable the students to learn Partial fractions, Binomial, Exponential, Logarithmic series and their application to summation of series, theory of equations and trigonometry. | | | | | | | | | |
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| **Expected Course Outcomes:** | | | | | | | | | |
| On the successful completion of the course, student will be able to: | | | | | | | | | |
| 1 | Know the concept of Binomial, Exponential, Logarithmic series and their application to summation of series and partial fractions. | | | | | | K1 | | |
| 2 | Acquire a clear knowledge regarding methods to find the root of the Reciprocal Equations | | | | | | K2 | | |
| 3 | Apply the appropriate method to find the Expansion of cosnɵ, sinnɵ, in series of cosines and sines of multiples of ɵ | | | | | | K3 | | |
| 4 | Apply the appropriate method to find the Expansion of cos nɵ and sin nɵ in powers of sines and cosines. | | | | | | K3 | | |
| 5 | Analyze the Roots with signs changed-Roots multiplied by a given number-Reciprocal roots-Reciprocal Equations—to increase or decrease the roots of a given equation-. to increase or decrease the roots of a given equations by a given quantity. | | | | | | K4 | | |
| **K1** - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** - Create | | | | | | | | | |
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| **Unit:1** | | **PARTIAL FRACTIONS** | | | **18 hours** | | | | |
| Resolve into partial fractions of the form: 1/(ax2+bx+c), (px+q)/ (ax2+bx+c),  (px2+qx+r)/(sx+t) (ax2+bx+c), 1/(sx+t)(ax+b)2, 1/(sx+t)(ax+b)3, (px+q)/ (sx+t)(ax2+bx+c)-simple Problems. | | | | | | | | | |
| **Unit:2** | | **ALGEBRA** | | | **18 hours** | | | | |
| Binomial, Exponential and Logarithmic series- Simple Problems related to the summation of series only (Proof not required) | | | | | | | | | |
| **Unit:3** | | **THEORY OF EQUATIONS** | | **18 hours** | | | | | |
| Transformations of equations-Roots with signs changed-Roots multiplied by a given number-Reciprocal roots-Reciprocal Equations—to increase or decrease the roots of a given equations by a given quantity. | | | | | | | | | |
| **Unit:4** | | **TRIGONOMETRY** | | **18 hours** | | | | | |
| Expansion in series- Expansion of cosnɵ, sinnɵ, in series of cosines and sines of multiples of ɵ | | | | | | | | | |

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| **Unit:5** | | TRIGONOMETRY -continuied | **18 hours** |
| Expansion in series- Expansion of cos nɵ and sin nɵ in powers of sines and cosines. | | | |
|  | | **Total Lecture hours** | **90 hours** |
| **Text Book(s)** | | | |
| 1 | Manicavachagom Pillay, T.K & others, “ ALGEBRA –Volume I”, S. Viswanathan (Printers & Publications), PVT.,LTD,2010. (Unit I to Unit III) | | |
| 2 | Trigonometry -T.K. Manichavasagam Pillai and S.Narayanan( Viswanathan Publishers and Printers Pvt. Ltd 2009. ) (Unit IV and Unit V) | | |
| **Reference Books** | | | |
| 1 | Mathematics for B.Sc. Branch I -Vol. I- P. Kandasamy and K.Thilagavathy (For B.Sc-I semester) (S. Chand and Company Ltd, New Delhi, 2004.) | | |
| 2 | P.Kandasamy & V.Thilagavathi – “Mathematics for B.Sc. Vol.I and II” S.Chand & Company Ltd. 2015 | | |
| **Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]** | | | |
| 1 | [https://www.brainkart.com/article/Introduction-to-Binomial,-Exponential-and-Logarithmic-](https://www.brainkart.com/article/Introduction-to-Binomial%2C-Exponential-and-Logarithmic-series_35107/)  [series\_35107/](https://www.brainkart.com/article/Introduction-to-Binomial%2C-Exponential-and-Logarithmic-series_35107/) | | |
| 2 | <http://www.nptelvideos.in/2012/11/mathematics-iii.html> | | |
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| Course Designed By: | | | |

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| **Cos** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** |
| **CO1** | S | M | M | S | S | S | S | M | S | S |
| **CO2** | S | M | M | M | S | S | S | M | M | S |
| **CO3** | S | M | S | S | S | S | S | S | S | S |
| **CO4** | S | M | S | S | S | S | S | S | S | S |
| **CO5** | S | S | S | S | S | S | S | S | S | S |

\*S-Strong; M-Medium; L-Low