

Portion for Internal ATKT exam September 2018

Department of Mathematics

Class	Odd semester (Semester I & III)	Even Semester (Semester II & IV)
FYBSc cs	<p>SUB: Descriptive Statistics and Introduction to Probability</p> <p>Measures of Central tendency: Mean, Median, mode for grouped frequency distribution. Measures dispersion: Variance, standard deviation, coefficient of variation for grouped frequency distribution, Quartiles, quantiles Real life examples, correlation, Karl Pearson's coefficients of correlation, Linear regression: fitting of linear regression using least square regression, coefficient of determination</p>	<p>SUB: Statistical Methods and Testing of Hypothesis:</p> <p>Standard distributions: Expectation and variance of a random variable, pmf, pdf, cdf, Introduction and properties without proof for following distributions; binomial, normal, chi-square, t, F. Examples</p> <p>Hypothesis testing: one sided, two sided hypothesis, critical region, p-value, tests based on t, Normal and F, confidence intervals, one way analysis of variance</p>
FY BSc CS	<p>Sub: DISCRETE MATHEMATICS</p> <p>FUNCTIONS,RELATIONS,RECURRENCE RELATIONS,COUNTING PRINCIPLES,GRAPHS,TREES</p>	<p>SUB: Calculus</p> <p>DERIVATIVE OF A FUNCTION,INCREASING, DECREASING AND CONCAVITY PROPERTY, RELATIVE EXTREMA, NEWTON'S METHOD, INDEFINITE INTEGRAL,AREA BETWEEN CURVES,NUMERICAL INTEGRATION,EULER'S METHOD,PARTIAL DERIVATIVES,CHAIN RULE,GRADIENT</p>
FYBSc IT	<p>Sub: DISCRETE MATHEMATICS</p> <p>SET THEORY,LOGIC OF COMPOUND STATEMENTS, METHODS OF PROOFS, SEQUENCES, FUNCTIONS,RELATIONS,GRAPHS, TREES,COUNTING,PROBABILITY</p>	<p>Sub: NUMERICAL AND STATISTICAL METHODS</p> <p>ERRORS,SOLUTIONS OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS,INTERPOLATION,GAUSS-JORDAN METHOD,GAUSS-SIEDEL METHOD,NUMERICAL DIFFERENTIATION AND INTEGRATION,LINEAR PROGRAMMING PROBLEMS,RANDOM VARIABLES</p>
SYBSc CS	<p>Combinatorics and Graph Theory</p> <p>Introduction to Combinatorics: Strings, Sets, and Binomial Coefficients: Strings- Combinations, Combinatorial, Induction: Introduction, The Positive Integers are Well Ordered, Graph Theory: Eulerian and Hamiltonian Graphs, Graph Coloring, Planar Counting, Labeled Trees Network Flows: Example on the Ford-Fulkerson Labeling Algorithm.</p>	<p>Linear Algebra using Python</p> <p>Vector Space: Vectors are functions, Solving a triangular system of linear equations. Linear combination, Span, Linear systems, homogeneous, linearly dependent and linearly independent Matrices as vectors, vector-matrix multiplication, Null space, Basis, Dimension: Dimension and rank, Direct sum, Dimension and linear functions, Gaussian elimination: Echelon form</p>

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SYBSc IT	<p>SUB: Applied Mathematics Matrices: Inverse of a matrix, Properties of matrices, Rank of Matrix, Characteristics roots and characteristics vectors, Cayley Hamilton Theorem Differential Equation: Separation of Variables, Exact differential Equation, Linear differential equation $f(D) y = X$, The complimentary Function, Particular integral , The Laplace Transform: Properties of Laplace Transformation, First Shifting Theorem, Second Shifting Theorem, Laplace Transform of an Integral, Laplace Transform of Derivatives,</p>	<p>SUB: Computer Oriented Statistical Techniques The Mean, Median, Mode, and Other Measures of Central Tendency, Quartiles, Deciles, and Percentiles, statistical Decision Theory: Statistical Decisions, Statistical Hypotheses, Tests of Hypotheses and Significance, or Decision Rules, Type I and Type II Errors, Level of Significance, Tests Involving Normal Distributions, Two-Tailed and One-Tailed Tests; The Chi-Square Test for Goodness of Fit, Contingency Tables, The Least-Squares Regression Lines</p>

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Class	Even Semester
FY BMS	<p>Subject: Business Mathematics (Semester II)</p> <p>Interest – Simple interest, compound interest, Equated monthly installments, reducing balance and flat rate of interest Annuity – Annuity immediate, present value and future value, Stated annual rate and effective annual rate.</p> <p>Matrices – Types of matrices, matrix multiplication, transpose of a matrix, Inverse of a Matrix (up to order three) using adjoint of a matrix and matrix inversion method</p> <p>Determinant – Determinants of a matrix of order two or three: properties of Determinants. Solving a system of linear equations using Cramer's rule</p>
FY BFM	<p>Subject: Business Statistics (Semester II)</p> <p>Graphs- Histogram & frequency polygon, Digraph-Multiple bar, pie, subdivided bar</p> <p>Mean (Arithmetic Mean & combined mean), Median, Mode, Quartiles & Quartiles Deviation with coefficient of Quartile, variance, Standard Deviation with coefficient of variance, Karl Pearson coefficient of correlation, Rank Correlation.</p> <p>Linear programming problems: formulation of LPP, solution by graphical method, problems relating to two variables only.</p>

CLASS	Odd Semester (semester I)
FY BSc BT	<p>Logic, Logarithm and its properties. Arithmetic and geometric progressions. Matrices: different types of matrix, Adjoint of a matrix. Determinant of square matrices, inverse of a nonsingular matrix.</p> <p>Polynomials over real numbers, rational roots Solving system of equations by LU decomposition by Do- Little method, Graphs of functions Limits and continuity</p> <p>Differentiation of functions of one variable. Application Definite integration and its applications.</p>