

**ARIGNAR ANNA GOVERNMENT ARTS COLLEGE**

**NAMAKKAL–637 002**

(Affiliated to Periyar University, Salem)

**2019 Regulation**

**Department of Mathematics**

**Programme: B. Sc., Mathematics**

<b>PO No.</b>	<b>Programme Outcomes</b> Upon Completion of the B. Sc., Mathematics Degree Programme, the graduate will able to
<b>PO 1</b>	Emerge with competency in the subject of Mathematics and apply knowledge to cater to the needs of Society/Employer/Institution/Own Business Enterprise
<b>PO 2</b>	Imbibe analytical/critical/logical/innovative thinking skills in the field of Mathematics and Statistics
<b>PO 3</b>	Acquire distinct traits and ethics with high professionalism to gain a broader insight into the domain concerned for nation building
<b>PO 4</b>	Communicate mathematical and statistical concepts, models, reasoning, explanation, interpretation and solutions clearly and effectively in multiple ways: orally, visually through FOSS, written reports and physical math models, as appropriate
<b>PO 5</b>	Employ efficient and accurate mathematical programming and computing tools to solve real-life problems

<b>PSO No.</b>	<b>Programme Specific Outcomes</b> Upon Completion of these courses the student would
<b>PSO 1</b>	Think in a critical manner.
<b>PSO 2</b>	Familiarize the students with suitable tools of mathematical analysis to handle issues and problems in mathematics and related sciences.
<b>PSO 3</b>	Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of mathematics and statistics
<b>PSO 4</b>	Provide students/learners sufficient knowledge and skills enabling them to undertake further studies in mathematics and its allied areas on multiple disciplines concerned with mathematics.
<b>PSO 5</b>	Encourage the students to develop a range of generic skills helpful in employment, internships and social activities.

<b>Course Title</b>	<b>CLASSICAL ALGEBRA</b>
<b>Subject Code</b>	<b>19UMA01</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Understand the genesis of Binomial Series, Exponential series, Logarithmic series
<b>CO 2</b>	Learn various techniques of getting results of Characteristic roots and characteristic vectors of a matrix.
<b>CO 3</b>	Know the concepts of Reciprocal equations – Transformation of equations
<b>CO 4</b>	Formulate mathematical models in Horner's method for approximation of roots of a polynomial equation – Newton's
<b>CO 5</b>	Method of evaluating a real root correct to given decimal places

<b>Course Title</b>	<b>DIFFERENTIAL CALCULUS</b>
<b>Subject Code</b>	<b>19UMA02</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Understand the genesis of ordinary differential equations
<b>CO 2</b>	Learn various techniques of getting exact solutions of solvable first order differential equations and linear differential equations of higher order
<b>CO 3</b>	Know Jacobians , Maxima and Minima of functions of two variables
<b>CO 4</b>	Grasp the concept of Curvature and radius of curvature - Definitions, Cartesian formula for radius curvature
<b>CO 5</b>	Formulate mathematical models Envelope of the one parameter family of curves.

<b>Course Title</b>	<b>OPERATION RESEARCH</b>
<b>Subject Code</b>	<b>19UMAE01</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Analyze and solve linear programming models of real life situations
<b>CO 2</b>	Provide graphical solutions of linear programming problems with two variables, and illustrate the concept of convex set and extreme points
<b>CO 3</b>	Understand the theory of the simplex method
<b>CO 4</b>	Know about the relationships between the primal and dual problems, and to understand sensitivity analysis.
<b>CO 5</b>	Learn about the applications to transportation, assignment and two-person zero-sum game problems

<b>Course Title</b>	<b>REAL ANALYSIS</b>
<b>Subject Code</b>	<b>19UMA10</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Understand many properties of the real line $\mathbb{R}$ and learn to define sequence in terms of functions from $\mathbb{R}$ to a subset of $\mathbb{R}$ .
<b>CO 2</b>	Recognize bounded, convergent, divergent, Cauchy and monotonic sequences to calculate their limit superior, limit inferior, and the limit of a bounded sequence
<b>CO 3</b>	Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers
<b>CO 4</b>	Learn some of the properties of Riemann integrable functions
<b>CO 5</b>	Applications of the fundamental theorems of integration.

<b>Course Title</b>	<b>MODERN ALGEBRA</b>
<b>Subject Code</b>	<b>19UMA09</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Recognize the mathematical objects called groups.
<b>CO 2</b>	Link the fundamental concepts of groups and symmetries of geometrical objects.
<b>CO 3</b>	Explain the significance of the notions of cosets, normal subgroups, and factor groups
<b>CO 4</b>	Analyze consequences of Lagrange's theorem.
<b>CO 5</b>	Learn about structure preserving maps between groups and their consequences

<b>Course Title</b>	<b>COMPLEX ANALYSIS</b>
<b>Subject Code</b>	<b>19UMA11</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Visualize complex numbers as points of $\mathbb{R}$ and stereographic projection of complex plane on the Riemann sphere
<b>CO 2</b>	Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy Riemann equations.
<b>CO 3</b>	Learn the role of Cauchy Goursat theorem and Cauchy integral formula in evaluation of contour integrals Apply Liouville's theorem in fundamental theorem of algebra.
<b>CO 4</b>	Understand the convergence, term by term integration and differentiation of a power series.
<b>CO 5</b>	Learn Taylor and Laurent series expansions of analytic functions, classify the nature of singularity, poles and residues and application of Cauchy Residue theorem


<b>Course Title</b>	<b>DISCRETE MATHEMATICS</b>
<b>Subject Code</b>	<b>19UMAE03</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Learn about partially ordered sets, lattices and their types
<b>CO 2</b>	Understand Boolean algebra and Boolean functions,
<b>CO 3</b>	Understand logic gates, switching circuits and their applications.
<b>CO 4</b>	Assimilate various graph theoretic concepts and familiarize with their applications.
<b>CO 5</b>	In finally how apply in real life applications.

<b>Course Title</b>	<b>NUMERICAL ANALYSIS</b>
<b>Subject Code</b>	<b>19UMAE05</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Obtain numerical solutions of algebraic and transcendental equations.
<b>CO 2</b>	Find numerical solutions of system of linear equations and check the accuracy of the solutions.
<b>CO 3</b>	Learn about various interpolating and extrapolating methods.
<b>CO 4</b>	Solve initial and boundary value problems in differential equations using numerical methods.
<b>CO 5</b>	Apply various numerical methods in real life problems.

<b>Course Title</b>	<b>C- PROGRAMMING FOR MATHEMATICS</b>
<b>Subject Code</b>	<b>19UMAS02</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Understand and apply the programming concepts of C which is important for mathematical investigation and problem solving.
<b>CO 2</b>	Use mathematical libraries for computational objectives.
<b>CO 3</b>	Represent the outputs of programs visually in terms of well formatted text and plots.
<b>CO 4</b>	Understanding Switch Statement, Operator, GOTO Statement
<b>CO 5</b>	Working on WHILE Statement, Do Statement, FOR Statement, Jumps in Loops, Simple Programs

<b>Course Title</b>	<b>LATEX THEORY</b>
<b>Subject Code</b>	<b>19UMAS03</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Understand and apply the programming concepts of Basic LaTeX – Sample document and Key Concepts.
<b>CO 2</b>	Use mathematical libraries for Equation environments – Fonts, hats and underlining braces
<b>CO 3</b>	Represent the outputs of programs visually in Further essential LaTeX
<b>CO 4</b>	Understanding Spacing, Accented characters, Dashes and hyphens, quotation marks, troubleshooting
<b>CO 5</b>	Apply to Latex- Pinpointing the error, common errors, warning messages

<b>Course Title</b>	<b>GRAPH THEORY</b>
<b>Subject Code</b>	<b>19UMA15</b>
<b>CO No.</b>	<b>Course Outcomes</b>
<b>CO 1</b>	Learn about basic graphs and properties
<b>CO 2</b>	Learn about Operations on graphs
<b>CO 3</b>	Understand Eulerian Graphs, Hamiltonian graphs, and their applications.
<b>CO 4</b>	Study the concepts of Characterization of Trees
<b>CO 5</b>	Assimilate various graph theoretic concepts and familiarize with their applications

  
**PRINCIPAL** (S)  
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 Arts College,  
 Namakkal - 637 002.  
 D.O. Code : CI-103.