Arunachal Pradesh University
Common Entrance Test (APUCET)
Syllabus for M.Sc in Mathematics

Higher Algebra

- Complex Numbers
- De Moivre's Theorem
- Theory of Equations
- Matrices and Determinants
- Eigenvalues and Eigenvectors

Abstract Algebra

- Groups
- Subgroups
- Rings
- Fields
- Homomorphisms
- Quotient Groups

Linear Algebra

- Vector Spaces
- Basis and Dimension
- Linear Transformations
- Inner Product Spaces
- Diagonalization

Real Analysis

- Sequences and Series
- Continuity
- Differentiability
- Riemann Integration
- Uniform Convergence

Complex Analysis

- Analytic Functions
- Cauchy-Riemann Equations
- Complex Integration
- Residue Theorem
- Conformal Mapping

Number Theory

- Divisibility
- Congruences
- Euler's Theorem
- Chinese Remainder Theorem

Differential Equations

- First Order ODE
- Higher Order ODE
- Series Solutions

Partial Differential Equations

- Wave Equation
- Heat Equation
- Laplace Equation

Vector Calculus

- Gradient
- Divergence
- Curl
- Green's Theorem
- Gauss Theorem
- Stokes' Theorem

Numerical Analysis

- Interpolation
- Numerical Integration
- Numerical Solution of ODEs

Mechanics

- Newton's Laws
- Work and Energy
- SHM
- Central Orbits

Fluid Dynamics

- Continuity Equation
- Euler's Equation
- Bernoulli's Equation

Operations Research

- LPP

- Simplex Method
- Transportation and Assignment Problems

Probability and Statistics

- Probability
- Random Variables
- Distributions
- Hypothesis Testing