



Geometric and Structural Foundations of Core Mathematics

Organized by

Department of Mathematics, Cochin University of Science and Technology (CUSAT)



SUMMER INTERNSHIP PROGRAMME 2026

May 2026 • 60 Hours Intensive • Offline Mode • Intake: Limited seats



ABOUT THE DEPARTMENT

The combined Department of Mathematics and Statistics came into existence in November 1976 and bifurcated to form an independent Department of Mathematics on 1st January, 1996. The Department conducts IM.Sc. Degree programme, MSc Programme, and Ph.D. programmes. Thrust areas of research are Algebra, Semi groups Theory, Functional Analysis, Framelets, Numerical Solution of PDE, Graph Theory, Optimization in Neural Networks, Wavelet Approximation, Operator Algebras, Operator theory and Convex Optimization, algorithms and their convergence and complexity analysis.

PROGRAMME OBJECTIVES

This programme bridges the gap between computation and conceptual understanding. Participants will:

- Master mathematical thinking.
- Develop **Geometric Intuition** for abstract structures.
- Prepare for advanced research and competitive examinations.

WHO CAN APPLY

Open exclusively to **1st, 2nd, and 3rd-year Undergraduate students** (FYUGP Semesters 1–6) from Science and Engineering disciplines. Students with a strong interest in Mathematics are encouraged to apply.

PROGRAMME MODULES

Module I — Real Analysis

Real number system, Limits and continuity of functions, Differentiability and geometric meaning of derivatives, Mean value theorems, Riemann integration and geometric interpretation of area

Module II — Linear Algebra: Vector Space Geometry

Vector spaces and subspaces, Linear independence and bases, Linear transformations as geometric maps, Rank nullity theorem, Inner product spaces, Orthogonality, Eigenvalues and invariant subspaces, Diagonalization and applications.

Module III — Group Theory: Symmetry & Structure

Groups and subgroups, Cyclic and permutation groups, Cosets and Lagrange's theorem, Normal subgroups and quotient groups, Homomorphisms and isomorphism theorems, Symmetry groups and geometric actions

Module IV — Calculus: Multivariable Perspective

Review of single-variable calculus, Functions of several variables, Partial derivatives and gradients, Directional derivatives and tangent planes, Chain rule and Jacobians, Taylor expansions, Constrained optimization and Lagrange

60 HOURS OF RIGOROUS MATHEMATICAL TRAINING

IMPORTANT DATES

Registration Opens: April 06, 2026
Registration Closes: April 20, 2026
Programme Dates: 11 May - 22 May, 2026
Mode: Offline

APPLICATION PROCESS

Candidates must submit the online registration form before the closing date. Selected participants will be notified via email.

Registration Fee

Rs. 2,000 per participant (non-refundable)

Registration Link: [Click here to register](#)

PROGRAMME COORDINATION

Co-ordinators: Dr. Tanusree Pandit
Assistant Professor
Dr. Shery Fernandez
Professor & Head of Department

CONTACT

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