

COMPLEX VARIABLES

Course No: **MM24002GE**

Total Credits: **02**

Semester: **M.A/M.Sc 2nd Semester**

Total Marks: **50**

Continuous Assessment: **Marks 10, Theory Marks: 40** Time Duration: **1½ Hrs Course**

Course objectives: To enable the students to understand basic concepts of complex variables as an extension of real number system.

Course Outcomes: Course outcomes for a Complex Variables course typically focus on developing students' understanding of complex numbers, functions, and their applications in various fields.

UNIT -I

Review of complex numbers, De-Moivre's theorem and its applications, functions of a complex variable, continuity and differentiability of complex functions, analytic functions, CR equations, complex integration, Cauchy's theorem (statement only), Cauchy's integral formulae, Liouville's theorem, Fundamental theorem of algebra.

UNIT -II

Maximum modulus principle (statement only), determination of maximum modulus of e^z , $\sin z$, $\cos z$ etc, expansion of an analytic function in a power series, Taylor's and Laurent's theorems (statements only), classification of singularities, zeros of analytic functions, argument principle, Rouché's theorem and its applications.

Books Recommended:

1. W. Rudin, Complex Analysis, McGraw Hill, 3rd Edition (2023).
2. Ahlfors, Complex Analysis, McGraw Hill (2000).
3. S. Ponaswamy, Foundations of Complex Analysis, Narosa (2011).
4. Schaum Series, Complex Variables, McGraw Hill, 2nd Edition (2017).