

Year & Sem: E1S2	Course Code: MA1201	Course Name: Engineering Mathematics-II	No. of Credits: 4	L	T&PS	P
				2	2	0

UNIT-1

Convergence of improper integrals, tests of convergence, Beta and Gamma functions - elementary properties, differentiation under integral sign, and differentiation of integrals with variable limits - Leibnitz rule.

UNIT-II

Rectification, double and triple integrals, computations of surface and volumes, change of variables in double integrals - Jacobians of transformations, integrals dependant on parameters - applications.

UNIT III: Vector Calculus

Scalar and vector fields, level surfaces, directional derivative, Gradient, Curl, Divergence, Laplacian, line and surface integrals, theorems of Green, Gauss and Stokes, orthogonal curvilinear coordinates.

UNIT IV: Complex Variables

Limit, Continuity, Differentiability and Analyticity of functions, Cauchy-Riemann equations

UNIT-V Complex integration Line integrals in complex plane, Cauchy's integral theorem, Independence of paths, Existence of indefinite integral, Cauchy's integral formula, Derivatives of analytic functions

UNIT-VI

Taylor's series, Laurent's series, Zeros and singularities, Residue theorem, Evaluation of real integrals.

Text Books:

Advanced Engineering Mathematics (3rd Edition) by R. K. Jain and S. R. K. Iyengar, Narosa Publishing House, New Delhi.

Reference Books:

Advanced Engineering Mathematics (8th Edition) by Erwin Kreyszig, Wiley-India. 2.
Complex variables and Applications (8th Edition), by J.W. Brown and R.V. Churchill, McGraw - Hill 2

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

- 1.
- 2.
- 3.