VIDYAVARDHAKA COLLEGE OF ENGINEERING
DEPARTMENT OF MATHEMATICS

COURSE OUTCOMES- CBCS Scheme
ENGINEERING MATHEMATICS

Sub. Name: Engg. Mathematics-I Sub. Code: 15MAT11

On completion of this course, students are able to:

CO-1: Apply the successive differentiation to analyze polar curves, evaluate radius of curvature, derivatives of arc length and obtain Taylor's & Maclaurin series, expansion of function of single variable.

CO-2: Apply the partial differentiation to find Total derivative and Jacobians of a given multivariable functions.

CO-3: Apply the Vector differential operator on scalar and vector point functions.

CO-4: Apply the reduction formula to evaluate definite integral. Apply various methods of the differential equation to solve first-order linear ODE and its applications to various fields.

CO-5: Apply the matrix techniques to reduce the quadratic forms to canonical forms, finding solutions of systems of linear equations in the different areas of Linear Algebra.

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Sub. Name: Engg. Mathematics-II Sub. Code: 15MAT21

At the end of semester the students should be able to:

CO-1: Apply ordinary differential equations to model engineering phenomena such as electrical circuits, forced oscillation of mass spring and elementary heat transfer

CO-2: Identify and **Evaluate** the non-linear D. E. to find solution of different non-linear systems.

CO-3: Apply partial differential equations to model problems in fluid mechanics, electromagnetic theory and heat transfer

CO-4: **Apply** multiple integrals to find area, volume, mass and moment of inertia of plane and solid region.

CO-5: **Apply** Laplace transform to determine general or complete solutions to linear ODE

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CO-5: **Apply** Laplace transform to determine general or complete solutions to linear ODE and apply them in networks to convert time domain to frequency domain

Sub: Engineering Mathematics III sub code: 15MAT31

At the end of semester the students should be able to:

CO-1: Apply periodic signals and Fourier series to analyze circuits and system communications and develop Fourier series for different types of functions.
CO-2: Apply Fourier transform and Z-transforms in general linear system theory for continuous-time signals and digital signal processing.
CO-3: Apply statistical method to fit various curves for the given data and also apply various numerical methods to obtain solution of algebraic and transandental equation.
CO-4: Apply different numerical techniques to interpret the relation, get familiar with the advent of high speed digital computers and increasing demand for numerical answers to various problems,.
CO-5: Apply Green's Theorem, Divergence Theorem and Stokes' theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems **CO-6:** Apply calculus of variation to determine the extremals of functional and to solve hanging chain problems

Sub: Engineering Mathematics IV sub code: 15MAT41

On completion of this course, students are able to:
CO-1: Apply appropriate single step and multi-step numerical methods to solve first and second order ordinary differential equations arising in flow data design problems.
CO-2: Apply appropriate multi-step numerical methods to solve second order differential equations arising in flow data design problems. **Apply** Bessel's function and Legendre's polynomials for tackling problems arising in continuum mechanics, hydrodynamics and heat conduction..

CO-3: Construction of analytic function by applying concepts of C-R equation. **Explain** the idea of analyticity , potential field's residues and poles of complex potentials in field theory and electromagnetic theory. **Evaluation** of complex line integrals
CO-4: Describe random variables and probability distributions using rigorous statistical methods to analyze problems associated with optimization of digital circuits, information, coding theory and stability analysis of systems and the knowledge of Joint probability distributions.
CO-5: Apply the concepts of sampling theory in decision making problems and Markov chains in attempting engineering problems in feasible random events