Engineering Mathematics - III syllabus for CS 3 Sem 2017 scheme | VTU CBCS 17MAT31 Syllabus

VTU Syllabus CS 2017 Scheme 3 SEM Engineering Mathematics - III

Module-1	Fourier Series	10 hours

Periodic functions, Dirichlet's condition, Fourier Series of periodic functions with period 2π and with arbitrary period 2c. Fourier series of even and odd functions. Half range Fourier Series, practical harmonic analysis-Illustrative examples from engineering field.

Module-2	Fourier Transforms	10 hours

Fourier Transforms: Infinite Fourier transforms, Fourier sine and cosine transforms. Inverse Fourier transform.

Z-transform: Difference equations, basic definition, z-transform-definition, Standard z-transforms, Damping rule, Shifting rule, Initial value and final value theorems (without proof) and problems, Inverse z-transform. Applications of z-transforms to solve difference equations.

Module-3	Statistical Methods	10 hours

Statistical Methods: Review of measures of central tendency and dispersion. Correlation-Karl Pearson's coefficient of correlation-problems. Regression analysis- lines of regression (without proof) –problems

Curve Fitting: Curve fitting by the method of least squares- fitting of the curves of the form, y = ax
+ b, y = ax2 + bx + c and y = aebx.

Numerical Methods: Numerical solution of algebraic and transcendental equations by Regula-Falsi
Method and Newton-Raphson method.

Module-4	Finite differences	10 hours

Finite differences: Forward and backward differences, Newton's forward and backward interpolation formulae. Divided differences- Newton's divided difference formula. Lagrange's interpolation formula and inverse interpolation formula (all formulae without proof)-Problems.

Numerical integration: Simpson's (1/3)th and (3/8)th rules, Weddle's rule (without proof) – Problems.

Module-5	Vector integration	10 hours

Vector integration: Line integrals-definition and problems, surface and volume integrals-definition,
Green's theorem in a plane, Stokes and Gauss-divergence theorem(without proof) and problems.

Calculus of Variations: Variation of function and Functional, variational problems. Euler's equation, Geodesics, hanging chain, problems.