TCIS, Hyderabad

Course: Mathematical Methods

Start Date: 8th August, 2017

Coordinates (Preferred): Tuesday and Thursday between 02.00 pm and 03.30 pm

Instructor(s): Prof. P.K. Madhu

Syllabus:

- Determinants and Matrix Algebra: Properties of determinants and matrices, Linear transformation, Eigenvector-Eigenvalue problems, Similarity and unitary transformations

- Differential Equations: Separable, Exact, and First-order homogeneous linear differential equations, Sturm-Liouville eigenvalue problem, Legendre polynomials and properties, Spherical harmonics, Bessel equations and properties

- Vector Algebra: Gradient, Divergence, Curl, Gauss and Stokes theorem, Curvilinear coordinates, Tensor analysis

- Complex Analysis : Cauchy-Riemann conditions, Analytic functions, Contour integrals, Taylor and Laurent series, Singularities, Residue theorem, Gamma and Beta function, Method of steepest descent, Stirling series, asymptotic series, Convergence tests

- Integral Transforms : Fourier series, Fourier transform, Laplace transform, Solution of initial boundary-value problem, Convolution

- Error Analysis