

**JIS College of Engineering**  
**(NAAC 'A' Accredited Autonomous Institution)**

**Syllabus for M. Tech (PGCS) 1<sup>ST</sup> YEAR 2<sup>ND</sup> SEM**

**Paper Name: Advanced Engineering Mathematics**

**Paper Code: M (PGCS) 201**

**Contact: 3L+1T**

**Course contents**

**Module-I**

Differential equations of higher order including partial differential equation; Infinite and power series. 10L

**Module-II**

**Vectors:** vector algebra in 2 and 3 spaces, vector calculus in multiple variables, gradients, divergence, curl, line integral, Green's theorem, surface integral; 10L

**Module-III**

**Matrices:** Basic concepts (addition, multiplication, rank, linear independence etc), Inverse of matrix, solutions of linear systems, Eigen values, eigenvectors, symmetric matrices, complex matrices. 10L

**Module-IV**

**Different transformations:** Fourier, Laplace, Z transform, etc.  
Data analysis and probability theory; Mathematical statistics. 10L

**Suggested Text / Reference Books:**

1. E. Kreyszig, "Advanced Engineering Mathematics 9th ed", John wiley & sons.
2. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Company.
3. B.S. Grewal, "Higher Engineering Mathematics", Khanna Publishers.
4. Sastry, "Engineering Mathematics 3rd ed VOL I,II", PHI.
5. Sankara Rao, "Introduction to Partial Differential Equation 2nd", PHI.