MA 201 T MATHAMETICS-III										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs./Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	---	7	4	30	60	10	---	---	100

UNIT I **08**

Systems of linear equations : Matrices, Matrix Operations, Special matrices, Elementary Matrices, Elementary transformation, Rank, Introduction to systems of Linear Equations, Conditions for consistency of the system of equations, Solution by Gauss Elimination and Gauss Jordan Method, Solving system of equation using inverse of a Matrix and Cramer's rule.

UNIT II **13**

Vector spaces: Euclidean n - space, Linear Transformations from R^n to R^m; Properties of Linear Transformations from R^n to R^m, Matrices of General Linear Transformations, Similarity; Isomorphisim, Vector space and Subspaces, Linear dependence and Independence of vectors; Basis, Dimension, Row space; null space; column space and rank of a matrix, Rank and Nullity, Dimension Theorem, Inner product spaces, Eigen values and Eigen vectors, Inner product , Angle and Orthogonality in Inner Product Spaces, Orthonormal Bases; Gram-Schmidt process; Least squares approximation, Orthogonal Matrices, Eigen values and Eigen vectors, Diagonalization.

UNIT III **13**

Fourier Series: Periodic functions, Euler's formulae, Dirichlet's conditions, expansion of even and odd functions, half range Fourier series, Perseval's formula, complex form of Fourier series.

Special Functions: Power series method to solve the equation, Frobenius method for solution near regular singular points, Legendre's equation, Legendre polynomials, Rodrigue's formula, Bessel's equation and Orthogonality.

UNIT IV **05**

Partial Differential Equations and its Applications: Classification of partial differential equations, Solutions of one dimensional wave equation, one dimensional unsteady heat flow equation in Cartesian and polar coordinates by variable separable method with reference to Fourier trigonometric series and by Laplace transform technique.

APPROXIMATE TOTAL 39 Hours

Texts and References

1. R. K. Jain & S. R. K. Iyengar, Higher Engineering Mathematics, 3rd Ed., Narosa (2007).
2. E. Kreyszig, Advanced Engineering Mathematics, 8th Ed., John Wiley (1999).
3. M.D. Raisinghania, Ordinary and Partial Differential Equations, 8th Ed., S. Chand Publication (2010).
4. H. Anton, Elementary Linear Algebra with Applications, 8th Ed., John Wiley (1995).
5. G. Strang, Linear Algebra and its Applications, 4th Ed., Thomson (2006).