M.A/M.Sc Mathematics Semester 4th

Effective from academic session 2011 ⟹ **Repetition for 2012 with minor change**

S.No	Subject Code	Subject Name	Theory		Internal	
			Max	Min.	Max	Min
1	MM-CP-401	Partial Differential Equations	80	32	20	08
2	MM-CP-402	Differential Geometry	80	32	20	08

Optional Courses

Any three of the following

S.No	Subject Code	Subject Name	Theory		Internal	
			Max	Min	Max	Min
1	MM-OP-403	Advanced Topics in Functional Analysis	80	32	20	08
2	MM-OP-404	Advanced topics in the Analytic Theory of Polynomials	80	32	20	08
3	MM-OP-405	Theory of Numbers-II	80	32	20	08
4	MM-OP-406	Advanced topics in Graph Theory	80	32	20	08
5	MM-OP-407	Mathematical Statistics	80	32	20	08
6	MM-OP-408	Wavelet Analysis	80	32	20	08
7	MM-OP-409	Banach Algebras and Spectral Theory	80	32	20	08

M.A/M.Sc Mathematics Semester 4th

Effective from academic session 2011 $\implies$ **Repetition for 2012 with minor change**

PARTIAL DIFFERENTIAL EQUATIONS

Course No. MM-CP-401

UNIT I

Partial Differential Equations of first order PDEs, origins of first order PDEs, Cauchy Problem for first order equations, Linear. equations of the first order, Nonlinear PDEs of the first order, Lagrange and Charpits methods for solving first order PDEs.

Unit II

Classification of Second order PDEs, General solution of higher order PDEs with constant coefficients, Method of separation of variables for Laplace, Heat and Wave equations.

Unit III

Three Basic Equations, the Wave equation---one dimensional case, D'Alembert's solution, the initial value problem in three space, Poisson's method of spherical averages, Hadamard's method of descent, Duhamel's Principle, the inhomogeneous wave equation.

Unit IV

Fourier transform, definition, Fourier transform---L^1-theory, Rieman-Lebesgue theorem, L^2-theory, Plancheral theorem, L^p-theory, Cauchy-Kowalewska theorem.

Recommended Books

Partial Differential Equations by Fritz John, Springer Verlag

Partial Differential Equations by Ian Sneddon, McGraw Hill

Partial Differential Equations by L.C. Evans, GTM, AMS, 1998

Partial Differential Equations by P. Prasad and R. Ravindaran,

Partial Differential Equations by Amarnath.