

Scheme for Choice Based Credit System (CBCS)

B.A/B.Sc. Mathematics

From Year 2016 and onwards

Semester	Name of the course	Course No.	Nature of course	Credits
1	Calculus	BMM-CR-16101	Core	6
2	Differential Equations	BMM-CR-16201	Core	6
3	Real Analysis	BMM-CR-16301	Core	6
	Complex Trigonometry	BMM-SEC-16301	SEC	2
	Logic and Sets	BMM-SEC-16302	SEC	2
4	Algebra	BMM-CR-16401	Core	6
	Theory of Equations	BMM-SEC-16401	SEC	2
	Vector Calculus	BMM-SEC-16402	SEC	2
5	Plane and Solid Geometry	BMM-DSE-16501	DSE	6
	Advanced calculus	BMM-SEC-16501	SEC	2
	Probability & Statistics	BMM-SEC-16502	SEC	2
6	Linear Algebra	BMM-DSE-16601	DSE	6
	Graph Theory	BMM-SEC-16601	SEC	2
	Boolean Algebra	BMM-SEC-16602	SEC	2

Note: The students have to opt one course from SEC in each of the semester III, IV, V & VI.

Syllabus for B.A/B.Sc., Mathematics, Semester - II

Course Name: Differential Equations (6 credits)

Course No: BMM-CR-16201

Unit-I

Differential equations, integrating factors, Bernoulli's equation, exact differential equations, necessary and sufficient conditions for exactness, symbolic operators, homogeneous and non-homogeneous linear differential equations with constant coefficients and those reducible to such equations.

Unit-II

Miscellaneous forms of differential equations, first order higher degree equations solvable for X, Y, Z, P equations from which one variable is explicitly absent, Clairut's form, equations reducible to Clairut's form.

Unit-III

Legendre polynomials, Bessel function, recurrence relation and differential equation satisfied by each of these functions, Wronskian and its properties

Unit-IV

Formation of partial differential equations, order and degree of partial differential equations, concept of linear and non-linear partial differential equations, linear partial differential equation of first order, Lagrange's method, Geometrical interpretation of the form $Pp + Qq = R$, Charpit's method, classification of second order partial differential equations into elliptical, parabolic and hyperbolic through illustrations only.

Books recommended

1. I. Sneddon, *Elements of Partial Differential Equations*, McGraw-Hill, International Edition, 1967.
2. M. D. Raisinghania, *Ordinary differential Equations*.
3. S. D. Chopra and M.L.Kochar, *Integral Calculus*, Kapoor Pub.
4. Shepley L. Ross, *Differential Equations*, 3rd Ed., John Willey and Sons, 1984.
5. Schaun Series, *Differential Equations*.