

SYLLABUS FOR
GENERIC ELECTIVES OF MATHEMATICS of B.A.(GEN.)
(For Other Discipline)

Under Choice Based Credit System (CBCS)

Effective from 2017-2018



The University of Burdwan

Burdwan-713104

West Bengal

Generic Electives of Mathematics of B.A. (General) for other discipline

Semester	Course Type	Course Code	Name of the Course	Credit Pattern (L:T:P)	Total class hrs./week	Marks	Credit
V	GE	BAMATH5GE1	Calculus	5:1:0	6	75	6
VI	GE	BAMATH6GE2	Geometry and Vector Calculus	5:1:0	6	75	6

Course :BAMATH5GE1

Calculus (Marks : 75)

Total lecture hours: 60

Limit and Continuity(ϵ and δ definition), fundamental theorems on limit, theorems on sum, product and quotient of continuous functions. Differentiability of functions, Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem on homogeneous functions (two variables). Tangent and normal, Curvature, Asymptotes. 20L

Integration by partial fractions, properties of definite integrals. Reduction formula:

$\sin^n x, \cos^n x, \tan^n x$. Areas and lengths of curves in the plane. 20L

First order exact differential equations. Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for x, y, p . Linear homogeneous equations with constant coefficients, Linear non-homogeneous equations. 20L

Books Recommended:

1. H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.
2. G.B. Thomas and R.L. Finney, *Calculus*, Pearson Education, 2007.
3. Shepley L. Ross, *Differential Equations*, 3rd Ed., John Wiley and Sons, 1984.
4. I. Sneddon, *Elements of Partial Differential Equations*, McGraw-Hill, International Edition, 1967.

Course : BAMATH6GE2

Geometry and Vector Calculus (Marks : 75)

Total lecture hours: 60

Techniques for sketching parabola, ellipse and hyperbola. Reflection properties of parabola, ellipse and hyperbola. Classification of quadratic equations representing lines, parabola, ellipse and hyperbola. Spheres, Cylindrical surfaces. 30L

Differentiation and partial differentiation of a vector function. Derivative of sum, dot product and cross product of two vectors with properties. Directional derivatives, Gradient, divergence and curl. 30L

Books Recommended:

1. G.B. Thomas and R.L. Finney, *Calculus*, 9th Ed., Pearson Education, Delhi, 2005.
2. H. Anton, I. Bivens and S. Davis, *Calculus*, John Wiley and Sons (Asia) Pvt. Ltd., 2002.
3. S.L. Loney, *The Elements of Coordinate Geometry*, McMillan and Company, London.
4. R. J.T. Bell, *Elementary Treatise on Coordinate Geometry of Three Dimensions*, McMillanIndia Ltd., 1994.
5. P.C. Matthew's, *Vector Calculus*, Springer Verlag London Limited, 1998.