INVERTIS
UNIVERSITY BAREILLY

CBCS Course Curriculum (Effective from Session 2022-23)
[Bachelor of Technology (B.Tech. Biotechnology)]

B.Tech Biotechnology: Semester-II
BBT-201 – Elementary Mathematics –II

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week	Class Test -12 Marks
Tutorials: 1 hr/Week	Teachers Assessment – 6 Marks
Credits: 4	Attendance – 12 Marks
	End Semester Exam – 70 marks

Course Objective:

To give an overview of Mathematical sciences and their significance. To give basic knowledge of mathematics for understanding of evolutionary biology. To have an overview of new domain mathematical biology

Course Learning Outcomes:

After completing the course, the student shall be able to:

CO1: To define the basic application of mathematics in science and biotechnology,

CO2: To summarize the applied mathematics in life sciences,

CO3: To determine basic principles of vectors, algebra and 3D geometry.

UNIT-I: ALGEBRA

ALGEBRA: Statement of Fundamental Theorem of Algebra, solution of quadratic equations , Solutions of cubic and biquardatic equations: Synthetic division, Cardan method, and Descarte Method. Linear Inequalities. Complex Numbers. Solution of system of linear equations (graphically). Series: Series. Arithmetic progression (A.P.). arithmetic mean (A.M.) Geometric progression (G.P.), general term of a G.P., sum of n terms of a G.P., geometric mean (G.M.), relation between A.M. and G.M. Sum to n terms of the special series $\_n$, $\_n2$ and $\_n3$. Matrices Algebra: Basics, Cayley Hamilton theorem, Eigen values and Eigen Vectors.
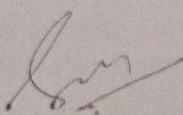
UNIT- II: COORDINATE GEOMETRY

Straight Lines: Brief recall of 2D from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axes, point-slope form, slope-intercept form, two point form, intercepts form and normal form. General equation of a line. Distance of a point from a line. Conic Sections: Sections of a cone: circle, ellipse, parabola, hyperbola, a point, a straight line and pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle, Asymptotes.
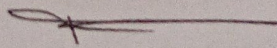
UNIT- III: VECTORS

Vectors: Vectors and scalars, magnitude and direction of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Scalar (dot) product of vectors, projection of a vector on a line. Vector (cross) product of vectors.
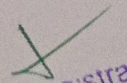
Suggested Readings:

Head
Department of Biotechnology
Invertis University, Bareilly (U.P.)

Dean
Faculty of Science
Invertis University, Bareilly (U.P.)

Registrar
Invertis University
Bareilly