VIDHYADEEP UNIVERSITY

VIDHYADEEP INSTITUTE OF PHARMACY, ANITA, SURAT

B. PHARMACY SEMESTER: I

Subject Name: Remedial Mathematics* (NUE)
 Subject Code: BP107TT (Theory)

Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform

Course Outcomes: Upon completion of this course the student should be able to

CO	STATEMENTS
C107.1	Know the theory and their application in Pharmacy
C107.2	Solve the different types of problems by applying theory
C107.3	Appreciate the important application of mathematics in Pharmacy
C107.4	Application of logarithm to solve pharmaceutical problems
C107.5	Application of Matrices in solving Pharmacokinetic equations
C107.6	Application of Laplace Transform in solving Pharmacokinetic equations

Teaching Scheme and Examination Scheme:

Teaching Scheme (hr./ Week)				Evaluation Scheme			
Theory	**Tutorial**	**Practical**	**Total**	**Internal**	**External**	**Internal**	**External**
				Theory Exam		**Practical Exam**	
2	**0**	**0**	**2**	**15**	**35**	**N/A**	**N/A**

Sr No	Course content	(hr)
1	**Partial fraction** Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction, Resolving into Partial fraction, Application of Partial Fraction, in Chemical Kinetics and Pharmacokinetics **Logarithms** Introduction, Definition, Theorems/Properties of logarithms, Common, logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems **Function:** Real Valued function, Classification of real valued functions, **Limits and continuity:** Introduction, Limit of a function, Definition of limit of a function $(\epsilon - \delta$ definition), $\lim\limits_{x \to a} \dfrac{x^n - a^n}{x - a} = na^{n-1}$, $\lim\limits_{\theta \to 0} \dfrac{\sin \theta}{\theta} = 1$,	6
2	**Matrices and Determinant:**	6

	Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants , Product of determinants, Minors and co-Factors, Adjoin or adjutant of a square matrix , Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley– Hamilton theorem, Application of Matrices in solving Pharmacokinetic equations	
3	**Calculus: Differentiation :** Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function , Derivative of the sum or difference of two functions, Derivative of the product of two functions (product formula), Derivative of the quotient of two functions Quotient formula) – Without Proof, Derivative of xn w.r.tx,where n is any rational number, Derivative of ex,, Derivative of loge x , Derivative of ax, Derivative of trigonometric functions from first principles (without Proof), Successive Differentiation, Conditions for a function to be a maximum or a Minimum at a point. Application	**6**
4	**Analytical Geometry:** Introduction: Signs of the Coordinates, Distance formula, Straight Line: Slope or gradient of a straight line, Conditions for parallelism and perpendicularity of two lines, Slope of a line joining two points, Slope – intercept form of a straight-line Integration: Introduction, Definition, Standard formulae, Rules of integration, Method of substitution, Method of Partial fractions, Integration by parts, definite integrals, application	**6**
5	**Differential Equations**: Some basic definitions, Order and degree, Equations in separable form, Homogeneous equations, Linear Differential equations, Exact equations, Application in solving Pharmacokinetic equations **Laplace Transform:** Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives, Application to solve Linear differential equations, **Application in solving Chemical kinetics and Pharmacokinetics equations**	**6**

Recommended Books (Latest Edition)
1. Differential Calculus by Shanthinarayan
2. Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H.
3. Integral Calculus by Shanthinarayan
4. Higher Engineering Mathematics by Dr.B.S.Grewal