GANPAT UNIVERSITY

FACULTY OF PHARMACY

Program	Bachelor of Pharmacy	Branch/Spec.	B.Pharm.
Semester	I	Version	3.0.0.0
Effective from Academic Year	2018-19	Effective for the batches Admitted onwards	June 2018
Subject code	BPH106	Subject Name	Remedial Mathematics

Teaching scheme					Examination scheme							
	Le	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	2	1	-	3	Theory	10	15	75	100	Theory	1 hr.	3 hr.
Credit	2	1	-	3	Practical	-	-	-	-	Practical	-	-

Pre-requisites

Nil

Scope and Objectives:

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:

CO1	Relate the theory and applications of basic mathematics with pharmaceutical sciences.
CO2	Discuss applications of partial fractions, limits, continuity, and logarithms in pharmaceutical computations.
CO3	Understand and apply concepts of calculus and analytical geometry to solve pharmaceutical problems.
CO4	Utilize formulas of matrices and determinants for solving pharmacy-related calculations.
CO5	Create and evaluate differential equations used in pharmaceutical sciences.
CO6	Apply the principles of Laplace transforms to solve time-dependent equations in chemical kinetics and pharmacokinetics.

Syllabus- Theory

Unit	Content	Hrs
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	6
2	**Matrices and Determinant:** 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, Adjoint or adjugate 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,Applicationof Matrices in solving Pharmacokinetic equations	6
3	**Calculus:Differentiation :** Introductions, Derivative of a function, Derivative 6 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 xnw.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 6 in separable form , Homogeneous equations, Linear Differential equations, Exact equations, Application in solving Pharmacokinetic equations	6

	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	

Recommended Books	
1	Differential Calculus by Shanthinarayan
2	Pharmaceutical Mathematics with application to Pharmacy by PanchaksharappaGowda D.H
3	Integral Calculus by Shanthinarayan
4	Higher Engineering Mathematics by Dr.B.S.Grewal

Mapping of CO with PO and PSO

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3	PS O4
CO1	3	0	2	0	0	0	0	0	0	0	0	0	3	2	0	0
CO2	3	0	2	0	0	0	0	0	0	0	0	2	3	2	0	0
CO3	3	0	2	0	0	0	0	0	0	0	0	3	3	2	0	0
CO4	3	0	2	0	0	0	0	0	0	0	0	2	3	2	0	0
CO5	3	0	1	0	0	0	0	0	0	0	0	3	3	1	0	0
CO6	3	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0