



Program	Bachelor of Pharmacy (BPharm)	Semester - 1
Type of Course	Elective	
Prerequisite		
Course Objective	-	
Effective From A.Y.	2023-24	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				External Marks (T)	Internal Marks (T)	External Marks (P)	Internal Marks (P)	
2	-	-	2	35	15	-	-	50

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	UNIT I 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 2. Logarithms Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems. 3. Function: Real Valued function, Classification of real valued functions, 4. Limits and continuity: Introduction, Limit of a function, Definition of limit of a function (ϵ - δ definition), $\lim_{x \rightarrow a} \frac{x^n - a^n}{x - a} = n a^{n-1}, \lim_{\theta \rightarrow 0} \frac{\sin \theta}{\theta} = 1$	6	20
2	UNIT II 5. 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 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	6	20
3	UNIT III 6. 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 x^n w.r.t x , where n is any rational number, Derivative of e^x , Derivative of $\log_e x$, Derivative of a^x , 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	20
4	UNIT IV	6	20



Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
	7. 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		
5	UNIT V	6	20
	8. Differential Equations: Some basic definitions, Order and degree, Equations in separable form, Homogeneous equations, Linear Differential equations, Exact equations, Application in solving Pharmacokinetic equations 9. 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		
Total		30	100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy

Level	Remembrance	Understanding	Application	Analyze	Evaluate
Weightage	15	40	20	10	15

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes

At the end of this course, students will be able to:

C01	Understanding basic formulas to be used for calculations in pharmacy.
C02	Ability to perform mathematical operations with confidence, speed and accuracy.
C03	Application of mathematics in pharmacy calculations.
C04	Ability to evaluate raw data and compilation.

Reference Books

1.	Differential Calculus (TextBook) By Shanthinarayan
2.	Pharmaceutical Mathematics with application to Pharmacy (TextBook) By Panchaksharappa Gowda D.H.
3.	Integral Calculus (TextBook) By Shanthinarayan
4.	Higher Engineering Mathematics (TextBook) By Dr. B.S. Grewal