

Syllabus
of
Bridge Course in Mathematics

for
Bachelor of Computer Application (BCA)

(Three Year Program)

Note:

The students who have passed 10+2 in any stream are eligible to take admission in BCA at CSJM University. But Students those who have not studied mathematics at 10+2 level have to qualify Non-Credit subject **Bridge Course in Mathematics** in first semester.

(Effective from the Session: 2026-27)



Chhatrapati Shahu Ji Maharaj (CSJM) University
UP State University | Formerly Kanpur University
Accredited 'A++' by NAAC | UGC Category-I University
Kanpur (UP)

AP

AI

Rabins Paul

(A)



BCA – Syllabus of Bridge Course in Mathematics

Course Outcome (CO)

At the end of course, the student will be able to:

CO1	Understand and apply number theory concepts, including divisibility rules, factorization, and logarithms, to solve mathematical problems.
CO2	Apply and analyze set theory, relations, and functions to solve problems involving sets, relations, and functional mappings.
CO3	Apply algebraic concepts, including progressions and binomial expansions along with permutation & combination to solve real-world and mathematical problems.
CO4	Understand and apply properties of determinants and matrices to solve system equations and related mathematical problems.
CO5	Apply trigonometric ratios, identities, and mensuration formulas to solve problems in geometry and measurement.

DETAILED SYLLABUS

Unit	Topic	Proposed Lecture
I	Number Theory: Number system, Division algorithm, Prime and composite numbers, Tests of divisibility by 2, 3, 4, 5, 9 and 11, Multiples and factors, Factorization Theorem, H.C.F. and L.C.M, Euclidean algorithm, Logarithms to base 10, laws of logarithms.	08
II	Set Theory: Definition, Types of Sets, Operation on Sets, Venn diagram, Equality of Sets. Relation: Definition, Types of Relation, Equivalence Relation and its Applications. Function: Definition, Types of Function, Injective, Surjective, and Bijective functions and its applications.	08
III	Algebra: Arithmetic, Geometric and Harmonic progressions, Exponential and Logarithmic Series, Permutation, Combination, Binomial Theorem.	08
IV	Determinants: Definition of Determinant, Properties of determinants, Minors, Cofactors, Product of two determinants. Matrices: Definition of Matrix and Its types, Addition, Subtraction, Scalar and Matrix Multiplication, Inverse of a Matrix.	08
V	Trigonometry: Pythagoras Theorem, Trigonometric Ratios, Trigonometric Ratios of Some Specific Angles, Trigonometric Identities. Mensuration: Area of Square, Rectangle, Triangle, Volume of Cone, Cylinder, Cuboid.	08

Suggested Readings:

1. R.D. Sharma, "Mathematics Volume I", Dhanpat Rai & Co. Pvt. Ltd.
2. David M. Burton, "Elementary Number Theory", Mc Graw Hill.
3. Kenneth Hoffman and Ray Kunze, "Linear Algebra", Pearson.
4. H.K. Dass, Dr. Rama Verma, "Introduction to Engineering Mathematics -Vol. I", S. Chand Publishing.
5. H.K. Dass, Dr. Rama Verma, "Introduction to Engineering Mathematics-Vol. II", S. Chand Publishing.
6. Samuel Ratcliffe Knight and Henry Sinclair Hall, "Elementary Trigonometry", Legare Street Press.