S. No.	Existing	Proposed
1	Skill Enhancement Courses (SEC) offered to B.Sc. (H) Mathematics (in 3rd and 4th Semester) are of 3 Credits	Since these courses should of 4 Credits according to UGC Guidelines, amendments have been made in the existing Courses to make them of 4 Credits
2	Skill Enhancement Courses (SEC) offered to B.A./ B.Sc. Programme (in 3rd, 4th, 5th and 6th Semesters) are of 3 Credits	Since these courses should of 4 Credits according to UGC Guidelines, amendments have been made in the existing Courses to make them of 4 Credits
3	Only One Generic Elective Paper is offered (in 1st, 2nd and 3rd Semester) to students of B.Sc. (H), B.A. (H) & B.Com (H) other than B.Sc. (H) Mathematics.	Two Generic Elective Papers are now offered each semester to students of B.Sc. (H), B.A. (H) & B.Com (H) other than B.Sc. (H) Mathematics.
4	No Generic Elective papers were being offered to students of B.A, B.Sc. & B.Com Programme in the 5th and 6th Semester	Generic Elective papers are now offered to students of B.A, B.Sc. & B.Com Programme in the 5th and 6th Semester

15/6/16

GENERIC ELECTIVE COURSES OFFERED TO B.A/ B.SC./ B.COM PROGRAMME

(Students who are not having Mathematics as a Discipline Subject can opt for such courses)

Semester	Core Course (12)	Ability Enhancement Compulsory Course (AECC) (2)	Skill Enhancement Course (SEC) (4)	Discipline Specific Elective (DSE) (4)	Generic Elective (GE) (2)
I					
II					
III					
IV					
V					**GE-1** General Mathematics-1
VI					**GE-2** General Mathematics-2

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Semester V

GE- 1: GENERAL MATHEMATICS-1

5 Lectures + 1 Tutorial per week (Ideal Tutorial Group Size: 12-15 Students)
Max. Marks 100 (including internal assessment)
Examination: 3 hrs

UNIT-I
A brief introduction to the lives and information on the works of the following Mathematicians: Euler, Lagrange, Laplace, Fourier, Gauss, Poisson, Cauchy, Abel, Dirichlet, Galois, Weierstrass, Cayley, Reimann

UNIT-II
An overview of number systems, including algebraic and transcendental numbers, with some historical background
Fundamental operations of Arithmetic, rules of divisibility, Hierarchy of operations and Modular Arithmetic, Euclidean algorithm
Prime numbers, the sieve of Erastosthenes, fundamental theorem of arithmetic, Euclid's Lemma, Fermat Numbers, Mersenne Numbers and Mersenne Primes, Prime testing method of Fermat, Statement and significance of Prime number theorem, Goldbach Conjectures, twin primes, uses of prime numbers, Perfect and Amicable numbers
Pythagorean triples and its properties, Statement and historic background of Fermat's Last Theorem
Multiplication rules, Permutation and combination, Latin Square, Magic Square

UNIT-III
Matrices, basic concepts and algebraic operations, types of matrices, transpose of a matrix, symmetric and skew symmetric matrices, Matrix multiplication and its properties, powers of square matrix, Inverse of a matrix and its properties, Determinant and its properties (matrix product, transpose), expansion by rows and columns, cofactors, determinant criteria for matrix singularity, adjoint matrix and calculation of inverse, Cramer rule

REFERENCES:
[1] Gullberg, Jan. *Mathematics: from the birth of numbers*. WW Norton & Company, 1997.
[2] James, Ioan, *Remarkable mathematicians: from Euler to von Neumann*. Cambridge University Press, 2002
[3] Stephen Andrilli and David Hecker, Elementary Linear Algebra, 4th Edition, Academic Press, 2009.

Semester VI

GE- 2: GENERAL MATHEMATICS-2

5 Lectures + 1 Tutorial per week (Ideal Tutorial Group Size: 12-15 Students)
Max. Marks 100 (including internal assessment)
Examination: 3 hrs

UNIT-I

A brief introduction to the lives and information on the works of the following Mathematicians: Dedekind, Cantor, Poincare, Hilbert, Moore, Hausdorff, Hardy, Noether, Polya, Ramanujan, Alexander, Banach, Neumann

UNIT-II

Basics of Graph theory, the Konigsberg Bridge problem, four-colour map problem, Mobius strip and Klein bottle

Introduction of functions, graphs of functions, increasing and decreasing functions, even and odd functions, location of points of extrema, inflection, periodic functions-all via graphs

Perspective and Projection, Perspective geometry: lines and points in 2D and 3D, Fundamental trigonometric functions, use of perspective in drawing, historical background, common tools adopted by artists for such representations, analysis of some paintings to spot use of perspective and techniques

Types of symmetry, concrete examples of symmetry groups, basic tilings, Study of symmetry and patterns by looking at monuments/ buildings/ ornamental art, Escher's art

Golden ratio, Golden rectangle, Fibonacci sequences in nature

Shapes and solids, the regular polyhedral, Euler's formula, Importance of Platonic solids and mystical significance to the ancient Greeks, Construction of Altars and geometry in ancient India

Fractals in nature, for example snowflakes and coastlines

UNIT-III

Solving system of linear equations, gauss elimination method and row operations, consistent and inconsistent system, Gauss Jordon row reduction and echelon form, homogeneous system, equivalent system, row equivalence, rank of a matrix, relation between homogeneous systems and rank, solving a system using the inverse of coefficient matrix

REFERENCES:

[1] Gullberg, Jan. *Mathematics: from the birth of numbers*. WW Norton & Company, 1997.
[2] James, Ioan, *Remarkable mathematicians: from Euler to von Neumann*. Cambridge University Press, 2002
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