TEACHING PLAN (JAN-JULY 2026)
SUBJECT-MATHEMATICS
TEACHER- DR. RUBI DAS

B.Sc 6th Semester

Paper Name: Linear Algebra
Paper Code: MAT060104
Credit: 4

TOPICS	No. Of Lecture	Time-Period	Mode of Teaching	Mode of Evaluation
Unit 1- Definition and examples of vector spaces, general properties of vector spaces, Definition and examples of subspaces, subspace criterions and algebra of subspaces, null space and column space of a matrix, Linear transformations, Kernel and range of a linear transformation.	Theory-8	Feb	Interactive lecture	HA/PL
Unit 2- Linear combinations of vectors, linearly dependent and independent sets, bases of vector spaces, coordinate systems, dimension of a vector space, ranks, change of basis.	Theory- 8	Feb	Do	HA/PL
Unit 3- Eigenvectors and eigenvalues of a matrix, The Characteristic equation, Diagonalization, eigenvector of a linear transformation, Complex eigenvalues. Invariant subspaces and Cayley- Hamilton Theorem.	Theory- 12	Feb-March	Do	HA/PL
Unit 4- Inner products, Length and orthogonality, orthogonal sets, orthogonal projections, The Gram-Schmidt process, Inner product spaces.	Theory- 12	March-April	Do	HA/PL
Solving Previous Year Question Paper, Problem Solve from Reference Book	Theory-12	April-May		

HA- Home Assignment, PL- Participatory Learning.

B.Sc 6th Semester

Paper Name: Partial Differential Equations (with practical)

Code: MAT060204

Credit: 4

TOPICS	No. Of Lecture	Time-Period	Mode of Teaching	Mode of Evaluation
Unit 1- Introduction, Classification, Construction of first order partial differential equations (PDE). Cauchy's problem for first order equations, linear equations of the first order, Integral surfaces passing through a given curve, Nonlinear partial differential equations of the first order, Cauchy's method of characteristics, Charpit's method. Solutions satisfying given conditions, Jacobi's method.	Theory-12	Feb-March	Interactive lecture	HA/PL
1. Solution of Cauchy problem for first order PDE. **2.** Plotting the characteristics for the first order PDE. 3. Plot the integral surfaces of a given first order PDE with initial data.	Practical-4	Feb-March	Computer (By using the Software Mathematics)	Assignments, Practical Notebook
4. Solution of wave equation 5.Solving systems of ordinary differential equations. 6.Solution of one-Dimensional heat equation	Practical-4	March-April	Do	Do

HA- Home Assignment, PL- Participatory Learning.

B.Sc 4th Semester

Paper Name: Number Theory
Paper Code: MAT0400404
Credit: 4

TOPICS	No. Of Lecture	Time-Period	Mode of Teaching	Mode of Evaluation
Unit 1- Well-Ordering Principle of integers, Archimedean property, First principle of finite induction, Second principle of finite induction, The division algorithm of integers, The greatest common divisor, The Euclidean algorithm, The Diophantine equation, Fundamental Theorem of Arithmetic, The sieve of Eratosthenes, The Goldbach Conjecture.	Theory-11	Feb	Interactive lecture	HA/PL
Unit 2- Congruence modulo of a fixed positive integer, Basic properties of congruences, Binary and decimal representation of integers, Linear congruences, Chinese Remainder Theorem, Fermat's Little Theorem, pseudoprimes, Wilson's Theorem.	Theory- 18	Feb-March	Do	HA/PL
Unit 3- Number Theoretic Functions: The sum and number of divisors of a positive integer, Multiplicative functions. Mobius function, The Mobius inversion Formula, The greatest integer function, Euler's Phi-Function, Euler's Theorem, Properties ofEuler's Phi function.	Theory- 16	April-May	Do	HA/PL

HA- Home Assignment, PL- Participatory Learning.

B.Sc. 4th Semester

Paper Name: Complex Analysis-I (Practical)
Paper Code: MAT0400204:
Credits: 4 (3+1)

TOPICS	No. Of Lecture	Time-Period	Mode of Teaching	Mode of Evaluation
1. Declaring a complex number and graphical representation. 2. Program to discuss the algebra of complex numbers. 3. To find conjugate, modulus and phase angle of an array of complex numbers.	Practical- 4	Feb	Computer (By using the Software Mathematica)	Assignments, Practical Notebook
4. To compute the integral over a straight line path between the two specified end points. 5. Contour integration. 6. Plot the complex functions and analyse the graph	Practical- 4	March	Do	Assignments, Practical Notebook
Practice Problem by Students (From Course Book)	Practical-4	April-May	Do	Assignments, Practical Notebook

B.Sc. 2nd Semester

Paper Name: LaTeX (SEC) (Theory+Practical)
Paper Code: SEC02006803
Credits: 3 (2+1)

TOPICS	No. Of Lecture	Time-Period	Mode of Teaching	Mode of Evaluation
Unit 1- Elements of LaTeX; Hands-on-training of LaTeX	Theory-5 Practical- 2	Feb	Interactive lecture, PPT, Computer (by making account on Overleaf)	HA/PL, Practical Notebook
Unit 2- Graphics in LaTeX; PS Tricks	Theory-8 Practical-3	March	Do	HA/PL, Practical Notebook
Unit 3- Beamer presentation	Theory-8 Practical-3	April-May	Do	HA/PL, Practical Notebook

HA- Home Assignment, PL- Participatory Learning.