Department of Mathematics ( Semester-V )
Lesson Plan 2025-2026
Undergraduate Course in Mathematics (CCF, under 2022) & NEP 2020

| Name of the Faculty | Paper Code / Allotted Topic / Text | Sub-Topic / Lesson Plan | Time Period ( Month/ Year ) | Number of Lectures |
|---|---|---|---|---|
| Dr. Saumitra Mukhopadhyay | Mechanics -II (MTHM-DSCC-12) | Statics-II:<br><br>1. Friction: Laws of static friction, Limiting friction, Angle of friction and Cone of friction. Positions of equilibrium of a particle constrained to rest on a (i) rough plane curve and (ii) rough surface. | 1st week of November | 4 |
| | | 2. Virtual work:<br><br>Degrees of Freedom, Constraints, Virtual Displacement, Virtual Work, Workless Constraints, Forces which do not appear in the equation of virtual work, Forces which appear in the equation of virtual work, Principle of virtual work for any system of coplanar forces acting on a rigid body and deduction of conditions of equilibrium from the Principle of virtual work. | 2nd week of November to 3rd week of November | 6 |
| | | 3. Stable and unstable equilibrium:<br><br>Field of forces, Conservative field, Potential energy of a system, Concepts of Stable, Unstable and Neutral equilibrium, Energy test of stability for a system having one degree of freedom, Stability when gravity is the only external force, Condition of stability of equilibrium of two heavy bodies resting one upon another, the bodies being rough enough to prevent sliding. | 3rd week of November to Last week of November | 6 |
| | | 4. Arbitrary force system in three dimensions:<br><br>Axis of a couple, Resultant of any number of couples acting on a rigid body, Reduction of a system of forces acting on a rigid body, Equilibrium equations, Reduction to wrench intensity and pitch of a wrench, Poinsot's central axis, Equation of the central axis of a given system of forces, Invariants of a given system of forces. | Last week of November to 1st week of December | 6 |
| | | Dynamics of a Particle-II:<br><br>Stability of nearly circular orbits, Disturbed orbits, Motion of a particle on rough curve, Expressions for components of velocity and acceleration referred to a set of rotating axes, Motion of a particle of varying mass including problems of mass addition (Rain-drop Problem) and mass reduction (Rocket Problem). | 2nd week of December to 3rd week of December | 8 |

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|---|---|---|---|---|
| Dr. Saumitra Mukhopadhyay | Mechanics -II (MTHM-DSCC-12) | Dynamics of a system of particles:<br><br>General theorems (Emphasis should be given on theoretical discussion only in this part): Configuration of a mechanical system and its degrees of freedom, External forces, Internal forces and two assumptions connected with these forces, Mass of a system, Centre of mass of a system and its motion, Linear momentum of a system and principle of conservation of linear momentum, Angular momentum of a system about a point and an axis, Angular momentum principle about the centre of mass, Conservation of angular momentum about a point and an axis, Kinetic energy (K.E.) of a system, The energy principle and Conservation of energy. | 1st week of January<br>to<br>2nd week of January | 4 |
| | | Dynamics of rigid body:<br><br>Vector angular velocity and its existence, particle velocities in a rigid body.<br>Moments and Products of Inertia, Moment of inertia of a body about any line through the origin of a coordinate frame, Radius of gyration, Equimomental systems, Principal axis and Momental ellipsoid, theorems of parallel and perpendicular axes (statements only). | 2nd week of January<br>to<br>3rd week of January | 4 |
| | | General motion:<br><br>Deduction of the equations: M $d\vec{V}/dx = \vec{F}$, $d\vec{L}/dx=\vec{K}$ from linear and angular momentum principle, Deductions of equations of motions from D'Alembert's Principle, Independence of the motion of centre of inertia and the motion relative to the centre of inertia, Angular momentum of a rigid body and the kinetic energy of a rigid body rotating about a fixed axis, Motion of a rigid body about a fixed axis, Compound pendulum, Interchangeability of the point of suspension and centre of oscillation. | 3rd week of January<br>to<br>1st week of February | 10 |
| | | Motion of a rigid body in two dimensions:<br><br>Equations of motion of a rigid body in two dimensions in the form M dVx/dx = Fx, M dVy/dx = Fy, I dω/dx = K. Expressions for K.E. and angular momentum about the origin, Condition of pure rolling and sliding. | 2nd week of February<br>to<br>3rd week of February | 6 |
| | | Motion under impulsive forces:<br><br>Equation of motion for impulsive forces for two dimensions, Statements of the conservation of linear and angular momentum. Problems of impulse applied to a free rod and a rod constrained to rotate about a fixed axis.<br>**Final revision and problem solving.** | 3rd week of February | 4 |

| Name of the Faculty | Paper Code / Allotted Topic / Text | Sub-Topic / Lesson Plan | Time Period ( Month/ Year ) | Number of Lectures |
|---|---|---|---|---|
| Dr. Jhuma Bhowmick | Probability & Statistics ( MTHM-DSCC-9 ) | Probability:<br><br>Random experiment, equally likely outcomes, Sample space, Events, σ-field, Probability as a set function, Probability axioms, Probability space; Conditional probability, The multiplication rule, The law of total probability and Bayes' theorem; Independence of events and trials; Joint probability, Bernoulli trial and binomial law, Poisson approximation of binomial law. | 1st week of November to 2nd week of November | 6 |
| | | Real random variables (discrete and continuous):<br><br>Distribution function of a random variable, Properties of distribution function, Probability mass / density functions and properties; Discrete distributions: Binomial, Poisson; Continuous distributions: Uniform, Normal, Exponential; Transformation of a random variable; Mathematical expectation, Mean, Variance, Moments, Quantiles, Skewness, Kurtosis, Median, Mode; Moment generating function, Characteristic function. | 3rd week of November to 2nd week of December | 12 |
| | | Multivariate random variables:<br><br>Joint distribution of discrete and continuous random variables and their properties, Joint probability mass / density functions, Marginal and Conditional distributions, Independent random variables; Conditional expectations, Expectation of function of two random variables, Moments, Covariance, Correlation coefficient, linear regression for two variables, regression curves; Bivariate normal distribution; Distribution of the sums of independent discrete / continuous random variables, Product of two random variables; Chi-square, t and F-distributions. | 3rd week of December to Last week of January | 20 |
| | | Chebyshev's inequality, Convergence in Probability, Statement of weak law of large num- bers and strong law of large numbers; Statement of Central limit theorem; Statement of De Moivre Laplace limit theorem, Normal approximation of the binomial distribution; Statement of Uniqueness theorem of Characteristic functions. **Final revision and problem solving.** | 1st week of February to 2nd week of February | 7 |
| | | Group – B: Statistics<br><br>Populations and Samples, Random Sample Sampling and Sampling Distributions, Distribution of the sample, Simple random sampling with and without replacement, Sample Statistic, Sample characteristics - Sample moments, Sample variance, Sampling from the normal distributions. | 3rd week of February | 3 |

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|---|---|---|---|---|
| Dr. Jhuma Bhowmick | Probability & Statistics ( MTHM-DSCC-9 ) | Estimation of parameters:<br><br>Point estimation, Interval Estimation, Mean-squared error, Properties of good estimators - unbiasedness, consistency, sufficiency, Minimum-Variance Unbiased Estimator (MVUE), Unbiased estimators for expectation and variance. | 3rd week of February<br>to<br>Last week of February | 4 |
| | | Method of Maximum likelihood:<br><br>The maximum likelihood principle, Likelihood function and Log-likelihood function, Maximum likelihood estimators for discrete and continuous models, Properties of maximum likelihood estimators. | Last week of February<br>to<br>1st week of March | 4 |
| | | Bivariate frequency Distribution:<br><br>Bivariate data, Correlation and covariance, Linear Regression, principle of least squares and fitting of polynomials and exponential curves. | 1st week of March<br>to<br>2nd week of March | 3 |
| | | Confidence intervals:<br><br>General principle; Confidence intervals for the mean of Normal population-for known variance and unknown variance; Confidence interval for variance of Normal population. | 2nd week of March | 3 |
| | | Statistical hypothesis:<br><br>Simple and composite hypotheses, null hypotheses, alternative hypotheses, one sided and two-sided hypotheses, The critical region and test statistic, type I error and type II error, level of significance, Power function of a test, most powerful test, Neyman-Pearson lemma (Statement only), Likelihood-ratio tests; Tests on the Mean of a Normal Distribution, Variance Known; Tests on the Mean of a Normal Distribution, Variance unknown; Tests on a Population Proportion, Chi-square test for goodness of fit.<br>**Final revision and problem solving.** | 3rd week of March<br>to<br>Last week of March | 8 |
| Dr. Jhuma Bhowmick | Mechanics ( MMTH-MN6) | Statics-I:<br><br>Idea about Physical Independence Principle of Forces, Principle of transmissibility of a force, Principle of action and reaction and Principle of parallelogram law of forces, Composition and resolution of forces, Concurrent Forces in a plane, Composition and resolution of forces, Equilibrium of three forces acting at a point, Lami's theorem, Moment of a force about a point and an axis, Varignon's theorem, Resultant forces and resultant couple, Coplanar forces: Its reduction and conditions of equilibrium. | 1st week of November<br>to<br>2nd week of November | 8 |

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|---|---|---|---|---|
| Dr. Jhuma Bhowmick | Mechanics ( MMTH-MN6) | Particle Dynamics-I:<br><br>Law of gravitation, Concept of inertial frame, Newton's laws of motion, Concept of equation of motion of a particle, Rectilinear motion in a given force field, Simple harmonic motion, damped and forced oscillations, Concept of resonance, motion of elastic strings, Rectilinear motion under uniform gravity, Rectilinear motion in a resisting medium where resistance is proportional to velocity. | 3rd week of November to 3rd week of December | 18 |
| | | Work, power, energy:<br><br>Work, power & energy, Conservative forces, Potential energy, Existence of potential energy function, Conservative field and Principle of conservation of energy. | 1st week of January | 4 |
| | | Impulse:<br><br>Impulse of a force, Impulsive force, Principle of conservation of linear momentum, Collision of elastic bodies: Coefficient of restitution, Newton's law of collision, Direct and oblique impact of a smooth sphere with a fixed plane, Direct and oblique impact of two smooth spheres. | 2nd week of January to 3rd week of January | 6 |
| | | Motion of a particle in a plane (2D Cartesian):<br><br>Angular velocity and angular acceleration, Expressions for components of velocity and acceleration, Tangential and normal components of velocity and acceleration, Motion of a projectile in a resisting medium under gravity. Motion of a particle in a plane (2D Polar): Expressions for components of velocity and acceleration, Central forces and central orbits, Motion under inverse square law, Times of describing the arcs of central orbits for a particle moving under inverse square law, Kepler's laws on planetary motion, Motion of artificial satellites, Tangential and normal components of velocity and acceleration, Constrained motion of a particle on smooth curve.<br>**Final revision and problem solving.** | Last week of January to 3rd week of March | 24 |

| Name of the Faculty | Paper Code / Allotted Topic / Text | Sub-Topic / Lesson Plan | Time Period ( Month/ Year ) | Number of Lectures |
|---|---|---|---|---|
| Dr. Md. Moid Shaikh | Riemann Integration and Series of Functions ( MTHM-DSCC-11) | Riemann integration:<br><br>Partition of a closed and bounded interval and refinement of a partition. Upper Darboux sum U(P, f) and lower Darboux sum L(P, f) and associated results. Upper integral and lower integral. Darboux's theorem. Darboux's definition of integration over a closed and bounded interval. Riemann's definition of integrability. Equivalence with Darboux's def- inition of integrability (statement only). Necessary and sufficient condition for Riemann integrability. | 1st week of November to 2nd week of November | 10 |
| | | Concept of negligible set (or zero set) defined as a set covered by countable number of open intervals sum of whose lengths is arbitrary small. Examples of negligible sets: any subset of a negligible set, finite set, countable union of negligible sets. A bounded function on closed and bounded interval is Riemann integrable if and only if the set of points of discontinuity is negligible (Statement only). Example of Riemann integrable functions. | 2nd week of November to 3rd week of November | 10 |
| | | Integrability of sum, scalar multiple, product, quotient, modulus of Riemann integrable functions. Properties of Riemann integrable functions arising from the above results.<br><br>Function defined by definite integral $\int (x\ f(t))dt$ and its properties. Antiderivative (primitive or indefinite integral).<br><br>Fundamental theorem of Integral Calculus. First Mean Value theorem of integral calculus. Weierstrass's & Bonnet's form of second mean value theorems (statement only). | Last week of November to 1st week of January | 10 |
| | | Improper integral:<br><br>Range of integration, finite or infinite. Necessary and sufficient condition for convergence of improper integral in both cases. Cauchy's principal value of improper integral.<br><br>Tests of convergence: Comparison and μ-test. Absolute and non-absolute convergence and inter-relations. Statement of Abel's and Dirichlet's test for convergence of the integral of product of two functions. | 2nd week of January | 5 |

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|---|---|---|---|---|
| Dr. Md. Moid Shaikh | Riemann Integration and Series of Functions ( MTHM-DSCC-11) | Convergence and working knowledge of Beta and Gamma function and their interrelation (statement only) $\Gamma(n)\Gamma(1-n) = \pi/\sin n\pi$ , $0 < n < 1$, to be assumed in computation of the integrals $\int_0^{\pi/2} (\sin x)^n dx$, $\int_0^{\pi/2} (\cos x)^n dx$, $\int_0^{\pi/2} (\tan x)^n dx$, when they exist (using Beta and Gamma function). **Final revision and problem solving.** | 3rd week of January | 5 |
| | | Group B: Series of Functions<br><br>Sequence of functions defined on a set, Point-wise and uniform convergence. Cauchy criterion of uniform convergence. Weirstrass's M-test. Boundedness, continuity, integrability and differentiability of the limit function of a sequence of functions in case of uniform convergence.<br><br>Series of functions defined on a set, Point-wise and uniform convergence. Cauchy criterion of uniform convergence. Weierstrass's M-test. Passage to the limit term by term. Boundedness, continuity, integrability, differentiability of a series of functions in case of uniform convergence. Dini's theorem. | Last week of January to 1st week of February | 10 |
| | | Power series:<br>Fundamental theorem of power series. Cauchy-Hadamard theorem. Determination of radius of convergence. Uniform and absolute convergence of power series. Properties of sum function. Differentiation and integration of power series. Abel's limit theorems. Uniqueness of power series having sum function.<br><br>Fourier series:<br>Trigonometric series. Statement of sufficient condition for a trigonometric series to be a Fourier series. Fourier coefficients for periodic functions defined on $[-\pi, \pi]$. Statement of Dirichlet's condition of convergence. Statement of Fourier's theorem on sum of Fourier series.<br>**Final revision and problem solving.** | 2nd week of February to 3rd week of February | 10 |

| Name of the Faculty | Paper Code / Allotted Topic / Text | Sub-Topic / Lesson Plan | Time Period ( Month/ Year ) | Number of Lectures |
|---|---|---|---|---|
| Dr. Md. Moid Shaikh | Mathematical Methods (MMTH-MDC-CC-7) | Group A:<br><br>Sequence and Series of functions:<br><br>Concept of Point-wise and Uniform convergence of sequence of functions and series of functions defined on intervals with special reference of Power Series, Statement of Weierstrass' M-Test for Uniform convergence of sequence of functions and of series of functions, Simple applications, Statements of important properties like boundedness, continuity, differentiability of the limit function of uniformly convergent sequence of functions and of the sum function of uniformly convergent series of functions, Convergence of Power Series, Radius of convergence, Statement of Abel's Theorem on Power Series and region of convergence of Power Series, Simple problems.<br>**Final revision and problem solving.** | 1st week of November to 2nd week of December | 20 |
| | | Group B:<br>Application of differential calculus:<br>Tangents and Normals, Pedal equations, Curvature, radius of curvature of plane curves, Rectilinear asymptotes (Cartesian only); Envelopes (Cartesian only), Concavity, Convexity, Point of inflection (Cartesian only), Definition and examples of singular points (viz. Node, Cusp, Isolated point) (Cartesian only).<br>Maxima and minima of functions:<br>Maxima and Minima of functions involving one and two variables, Lagrange's Method of undetermined multipliers of functions involving two variables (Problems only). **Final revision and problem solving.** | 3rd week of December to Last week February | 28 |
| | | Group C:<br>Fourier series on [ π, π]:<br><br>Periodic function, Determination of Fourier coefficients, Statement of Dirichlet's conditions (improperness excluded) for convergence and statement of the theorem on convergence and sum of Fourier series, Sine and Cosine series.<br><br>Laplace Transform and its application to ordinary differential equation:<br><br>Laplace Transform and Inverse Laplace Transform, Statement of Existence theorem, Statements of elementary properties of Laplace Transform and its Inverse, Application of the solution of ordinary differential equation of second order with constant coefficients.<br>**Final revision and problem solving.** | 1st week of March to Last week of March | 12 |

| Name of the Faculty | Paper Code / Allotted Topic / Text | Sub-Topic / Lesson Plan | Time Period ( Month/ Year ) | Number of Lectures |
|---|---|---|---|---|
| Dr. Nilofar Nahid | Ring Theory - II and Linear Algebra - I ( MTHM-DSCC-10) | Group – A: Ring Theory - II<br><br>Principal ideal domain, principal ideal ring, prime element, irreducible element, greatest common divisor (gcd), least common multiple (lcm), expression of gcd, examples of a ring R and a pair of elements a, b R such that gcd(a, b) does not exist, Euclidean domain, relation between Euclidean domain and principal ideal domain. | 1st week of November to 3rd week of November | 8 |
| | | Polynomial rings, division algorithm and consequences, factorisation domain, unique factorisation domain, irreducible and prime elements in a unique factorisation domain, relation between principal ideal domain, unique factorisation domain, factorisation domain and integral domain, polynomial ring over unique factorisation domain, Eisenstein criterion and unique factorisation in Z[x].<br><br>Ring embedding and quotient field, regular rings and their examples, properties of regular ring, ideals in regular rings.<br><br>**Final revision and problem solving.** | Last week of November to 1st week of January | 16 |
| | | Group –B: Linear Algebra - I<br><br>Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces. Subspaces of Rn. Dimension of subspaces of Rn. Geometric significance of subspace up to R3. Four fundamental subspaces associated with a matrix. The dimension of the solution space of Ax = 0 and the rank of A. Full rank factorisation, rank inequalities, Sylvester's inequality. | 2nd week of January to 1st week of February | 14 |
| | | Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, change of coordinate matrix. Algebra of linear transformations. Isomorphisms. Isomorphism theorems, invertibility and iso- morphisms. Eigen values, eigen vectors and characteristic equation of a matrix (over C). Cayley-Hamilton theorem and its use in finding the inverse of a matrix.<br><br>**Final revision and problem solving.** | 2nd week of February to 3rd week of March | 14 |

| Name of the Faculty | Paper Code / Allotted Topic / Text | Sub-Topic / Lesson Plan | Time Period ( Month/ Year ) | Number of Lectures |
|---|---|---|---|---|
| Dr. Nilofar Nahid | Ordinary Differential Equations- I & Group Theory - I (MMTH-MN5) | Group A: Ordinary Differential Equations – I<br><br>Formation of differential equations, order and degree of a differential equation, First order and first degree differential equations; Homogeneous and exact differential equations, conditions for an equation of the first order to be exact, Integrating factors, Rules for finding integrating factors, Linear equations and Bernoulli equations. | 1st week of November to 3rd week of November | 8 |
| | | First order higher degree differential equations solvable for x, y and p, Clairaut's forms. Singular solutions, Equations of tac-locus, nodal locus, cuspidal locus. | Last week of November to 1st week of December | 6 |
| | | Higher order linear and nonlinear equations, Concept of Wronskian and its properties, Complementary functions, Particular integrals, linear homogeneous and non-homogeneous equations with constant coefficients, Method of undetermined coefficients, Method of variation of parameters. Simultaneous linear differential equations. | 2nd week of December to 1st week of January | 10 |
| | | Higher order linear equations with variable coefficients reducible to linear equations with constant coefficients (Euler's equation), Condition for exactness of higher order linear equations, Integrating factors, Equations of the form $d^n y = f(y)$ $(n \geq 2)$.<br>**Final revision and problem solving.** | 2nd week of January to 1st week of February | 12 |
| | | Group-B: Group Theory – I<br><br>Definition of a group, examples of groups including permutation groups, dihedral groups and quaternion groups (through matrices), elementary properties of groups, examples of commutative and non-commutative groups. Subgroups and examples of subgroups, necessary and sufficient condition for a nonempty subset of a group to be a subgroup, Normalizer, centralizer, center of a group, product of subgroups. | 2nd week of February to 1st week of March | 12 |
| | | Order of an element of a group, order of a group, cyclic group, properties of cyclic groups, classification of subgroups of cyclic groups, Permutation, cycle notation for permutations, properties of permutation, even and odd permutations, Alternating group, properties of cosets, Lagrange's theorem and consequences including Fermat's little theorem.<br>**Final revision and problem solving.** | 2nd week of March to Last week of March | 12 |

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|---|---|---|---|---|
| Bulbul Ahmed | Statistics and Numerical Analysis (MMTH-MDC-CC-6) | Group A: Statistics<br><br>Probability Theory:<br>Theorems on Total Probability, Conditional probability and Multiplication theorem, Bayes' Theorem (Application only), Independence of events, Related Problems.<br><br>Compound experiment, Independent trials, Bernoulli's trials, Binomial law.<br><br>Probability Distribution:<br>Random Variables, Probability Distribution function, Properties of probability distribution function, Discrete and continuous distribution, Probability mass and probability density function, Some important probability distributions and their properties - Binomial, Poisson, Uniform and Normal, Related problems. | 1st week of November to Last week of November | 8 |
| | | Two-dimensional random variables and bivariate distribution (discrete and continuous), Marginal distribution, Bivariate Uniform and Normal distributions, Related problems. | 1st week of December to 2nd week of December | 5 |
| | | Mathematical Expectation:<br>Definition of mathematical expectation, Mean, Variance, Standard Deviation, Moments, Theorems on mathematical expectation (statement only), Standardised random variate, Mean, Variance and standard deviation of Binomial, Poisson and Normal distributions.<br><br>Mathematical Expectation in bivariate distribution, Moments, Covariance, Correlation coefficient,<br>E(X+Y) = E(X)+E(Y), E(XY) = E(X)E(Y ) for independent variates. | 3rd week of December to 1st week of January | 4 |
| | | Elements of Statistical Methods:<br>Measure of Central tendency: Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and Mode (their advantages and disadvantages), Relation between Mean, Median and Mode.<br><br>Measures of Dispersion: Range, Quartile Deviation, Mean Deviation, Variance / Standard Deviation. | 2nd week of January to 3rd week of January | 3 |
| | | Moments, Raw moments and Central moments and relation between them, Effect of change of origin and change of scale on moments. | 3rd week of January to Last week of January | 3 |

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|---|---|---|---|---|
| Bulbul Ahmed | Statistics and Numerical Analysis (MMTH-MDC-CC-6) | Group-A: Statistics<br><br>Correlation and Regression:<br><br>Bivariate data, Scatter Diagram, Correlation coefficient - its determination and properties, Regression lines of y on x and x on y - their deductions and properties. | 1st week of February to 2nd week of February | 4 |
| | | Sampling Theory:<br><br>Meaning and objects of sampling, Parameter and Statistic, Sampling distribution of a statistic, Methods of drawing random sample, Mean and Variance of sample mean, Basic idea of some distributions used in Sampling Theory -<br>(i) Standard Normal distribution, (ii) Chi-square distribution, (iii) Student's t-distribution, (iv) Snedecor's F-distribution, Related problems. | 3rd week of February to Last week of February | 5 |
| | | Statistical Inference:<br><br>Estimation of Parameters, Unbiased estimator, Consistent estimator, Sample mean is an unbiased estimate of population mean, Sample variance is a biased estimator of population variance, Point estimation, Interval estimation, Method for finding Confidence Intervals, Confidence intervals for mean of Normal (μ, σ) population when σ is known and when σ is unknown, Statistical Hypothesis - Null Hypothesis and Alternative Hypothesis, Critical Region, Type I and II error, Level of significance, Related simple problems.<br>**Final revision and problem solving.** | 1st week of March to Last week of March | 8 |
| Dr. Nilofar Nahid | Statistics and Numerical Analysis (MMTH-MDC-CC-6) | Group B: Numerical Analysis<br><br>Approximate numbers: Significant figures, Rounding off of numbers. Errors Absolute, Relative and Percentage.<br>Operators - Δ, ∇ and E (Definitions and some relations among them). | 1st week of November to Last week of November | 4 |
| | | Interpolation:<br><br>Problem of interpolation, Equi-spaced arguments, Difference Table, Deduction of Newton's Forward Interpolation Formula, remainder term (expression only), Newton's Backward interpolation Formula (Statement only) with remainder term. Unequally-spaced arguments, Lagrange's Interpolation Formula (Statement only), Related problems. | 1st week of December to 3rd week of January | 6 |
| | | Numerical Integration:<br><br>Trapezoidal rule and Simpson's 1/3 rule with geometrical interpretation, Related problems. | Last week of January to 2nd week of February | 3 |

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|---|---|---|---|---|
| Dr. Nilofar Nahid | Statistics and Numerical Analysis (MMTH-MDC-CC-6) | Numerical solution of nonlinear equations:<br><br>To find a real root of an algebraic or transcendental equation. Location of root (tabular method), Bisection method, Newton-Raphson method with geometrical interpretation. Related problems. | 3rd week of February to 2nd week of March | 4 |
| | | Numerical solution of system of linear equations:<br><br>Gauss elimination method using partial pivoting for solution of system of three linear equations in three unknowns.<br><br>**Final revision and problem solving.** | 3rd week of March to Last week of March | 3 |