

## Lesson Plan

Name of Teacher: Ms. Sanehlata		Class: B.Com 1st
Session: 2022-23 Odd Semester		Subject: Business Mathematics
Week	Date/Month	Topic
1	Aug.29-Sept.3	Theory of Sets - Meaning, elements types, presentation and equality of sets
2	Sept. 5-10	
3	12-17	Union, Intersection, Complement, and Difference of Sets, Venn diagram, Application
4	19-24	
5	Sept.26- Oct.1	Permutations
6	Oct. 3-8	Combinations
7	10-15	Sequences - types of Sequences, Examples
8	17-21	
9	27-29	Series- Comparison test & solutions
10	Oct. 31-Nov. 5	Arithmetic progression, A.P.
11	7-12	Data interpretation - Introduction approaches to data interpretation
12	14-19	
13	21-26	Bar graph
14	Nov.28-Dec. 3	Pie chart
15	5-10	Line graphs, Mix Graphs
16	12-17	
17	19-24	Revision and Test
18	26-30	Revision and Test

Sanehlata

## Lesson Plan

<b>Name of Teacher:</b> Ms. Saneh lata		<b>Class:</b> B.Sc. 1 <sup>st</sup> Year
<b>Session:</b> 2022-23 Odd Semester		<b>Subject:</b> Algebra
Week	Date/Month	Topic
1	Aug.29-Sept.3	Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices. Elementary Operations on matrices.
2	Sept. 5-10	Rank of a matrices, Inverse of a matrix
3	12-17	Linear dependence and independence of rows and columns of matrices. Row rank and column rank of a matrix. Eigenvalues
4	19-24	Eigenvectors and the characteristic equation of a matrix. Minimal polynomial of a matrix.
5	Sept.26- Oct.1	Cayley Hamilton theorem and its use in finding the inverse of a matrix.
6	Oct. 3-8	Applications of matrices to a system of linear
7	10-15	Solutions of cubic equations
8	17-21	Biquadratic equations and their solutions
9	27-29	Theorems on consistency of a system of linear equations.
10	Oct. 31-Nov. 5	Relations between the roots and coefficients of general polynomial equation in one variable.
11	7-12	Solutions of polynomial equations having conditions on roots. Transformation of equations
12	14-19	Nature of the roots of an equation Descarte's rule of signs
13	21-26	Common roots and multiple roots.
14	Nov.28-Dec. 3	Unitary and Orthogonal
15	5-10	Bilinear and Quadratic forms
16	12-17	Biquadratic equations and their solutions
17	19-24	Revision and test
18	26-30	Revision and test

*Saneh Lata*

Name of Teacher: Ms. Sanehlata		Class: B.Sc. 1 <sup>st</sup> Year
Session: 2022-23 Odd Semester		Subject: Solid Geometry
Week	Date/Month	Topic
1	Aug.29-Sept.3	Sphere: Plane section of a sphere. radical plane of two spheres.
2	Sept. 5-10	Sphere through a given circle. Intersection of two spheres,
3	12-17	Co-oxal system of spheres
4	19-24	Cones. Right circular cone,
5	Sept.26- Oct.1	enveloping cone and reciprocal cone.
6	Oct. 3-8	Cylinder: Right circular cylinder and enveloping cylinder.
7	10-15	Central Conicoids: Equation of tangent plane.
8	17-21	Director sphere. Normal to the conicoids. Polar plane of a point
9	27-29	Enveloping cone of a coinoid. Enveloping cylinder of a coinoid
10	Oct. 31-Nov. 5	General equation of second degree. Tracing of conics. Tangent at any point to the conic
11	7-12	chord of contact, pole of line to the conic, director circle of conic. System of conics. Confocal conics.
12	14-19	Polar equation of a conic, tangent and normal to the conic.
13	21-26	Paraboloids: Circular section,
14	Nov.28-Dec. 3	Plane sections of conicoids. Generating lines.
15	5-10	Confocal conicoid.
16	12-17	Reduction of second degree equations
17	19-24	Revision and test
18	26-30	Revision and test

*Sanehlata*

## Lesson Plan

<b>Name of Teacher:</b> Ms. Salaj		<b>Class:</b> B.Sc. 1 <sup>st</sup> Year
<b>Session:</b> 2022-23 Odd Semester		<b>Subject:</b> Calculus
Week	Date/Month	Topic
1	Aug.29-Sept.3	Definition of the limit of a function. Basic properties of limits
2	Sept. 5-10	Continuous functions and classification of discontinuities.
3	12-17	Differentiability. Successive differentiation
4	19-24	Leibnitz theorem. Maclaurin and Taylor series expansions
5	Sept.26- Oct.1	Asymptotes in Cartesian coordinates
6	Oct. 3-8	Intersection of curve and its asymptotes, asymptotes in polar coordinates.
7	10-15	Curvature, radius of curvature for Cartesian curves
8	17-21	polar curves. Newton's method. Radius of curvature for pedal curves
9	27-29	Tangential polar equations. Centre of curvature. Circle of curvature. Chord of curvature. evolutes.
10	Oct. 31-Nov. 5	Tangential polar equations. Centre of curvature. Circle of curvature. Chord of curvature. evolutes.
11	7-12	Tests for concavity and convexity. Points of inflexion. Multiple points. Cusps, nodes & conjugate points.
12	14-19	Tracing of curves in Cartesian, parametric and polar co-ordinates
13	21-26	Reduction formulae, Rectification, intrinsic equations of curve.
14	Nov.28-Dec. 3	Quadrature area. Area bounded by closed curves
15	5-10	Volumes and surfaces of solids of revolution
16	12-17	Theorems of Pappu's and Guilden
17	19-24	Revision and test
18	26-30	Revision and test

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## Lesson Plan

Name of Teacher: Ms. Saneh Lata		Class: B.Sc. 2 <sup>nd</sup> Year
Session: 2022-23 Odd Semester		Subject: Advanced Calculus
Week	Date/Month	Topic
1	Aug. 22-27	Continuity, Sequential Continuity, properties of continuous functions, Uniform continuity, chain rule of differentiability
2	Aug.29-Sept.3	Mean value theorems; Rolle's Theorem and Lagrange's mean value theorem and their geometrical interpretations. Taylor's Theorem with various forms of remainders.
3	Sept. 5-10	Darboux intermediate value theorem for derivatives, Indeterminate forms.
4	12-17	Limit and continuity of real valued functions of two variables. Partial differentiation. Total Differentials
5	19-24	Composite functions & implicit functions. Change of variables. Homogenous functions & Euler's theorem on homogeneous functions.
6	Sept.26-Oct.1	Taylor's theorem for functions of two variables.
7	Oct. 3-8	Differentiability of real valued functions of two variables. Schwarz and Young's theorem.
8	10-15	Implicit function theorem. Maxima, Minima and saddle points of two variables
9	17-21	Lagrange's method of multipliers.
10	27-29	Revision and test
11	Oct. 31-Nov. 5	Curves: Tangents, Principal normals.
12	7-12	Binormals, Serret-Frenet formulae.
13	14-19	Locus of the centre of curvature, Spherical curvature
14	21-26	Locus of centre of Spherical curvature
15	Nov.28-Dec. 3	Involutes, evolutes
16	5-10	Bertrand Curves. Surfaces: Tangent planes
17	12-17	One parameter family of surfaces, Envelopes
18	19-24	Revision and test
19	26-30	Revision and test

*Saneh Lata*

## Lesson Plan

<b>Name of Teacher:</b> Ms. Salaj		<b>Class:</b> B.Sc. 2 <sup>nd</sup> Year
<b>Session:</b> 2022-23 Odd Semester		<b>Subject:</b> Statics
Week	Date/Month	Topic
1	Aug. 22-27	Composition and resolution of forces.
2	Aug.29-Sept.3	Composition and resolution of forces.
3	Sept. 5-10	Parallel forces.
4	12-17	Moments
5	19-24	Couples
6	Sept.26- Oct.1	Analytical conditions of equilibrium of coplanar forces
7	Oct. 3-8	Problems, revision and test
8	10-15	Friction
9	17-21	Friction
10	27-29	Centre of Gravity
11	Oct. 31-Nov. 5	Centre of Gravity
12	7-12	Virtual work.
13	14-19	Forces in three dimensions
14	21-26	Poinsots central axis
15	Nov.28-Dec. 3	Wrenches
16	5-10	Null lines and planes
17	12-17	Stable and unstable equilibrium.
18	19-24	Problems, revision and test
19	26-30	Problems, revision and test

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## Lesson Plan

<b>Name of Teacher:</b> Ms. Salaj		<b>Class:</b> B.Sc. 2 <sup>nd</sup> Year
<b>Session:</b> 2022-23 Odd Semester		<b>Subject:</b> Partial Differential Equations
Week	Date/Month	Topic
1	Aug. 22-27	Partial differential equations: Formation, order and degree Complete solution, singular solution.
2	Aug.29-Sept.3	General solution, Solution of Lagrange's linear equations.
3	Sept. 5-10	Charpit's general method of solution. Compatible systems of first order equations, Jacobi's method
4	12-17	Linear partial differential equations of second and higher orders.
5	19-24	Linear and non-linear homogenous and non-homogenous equations with constant co-efficients.
6	Sept.26- Oct.1	Partial differential equation with variable co-efficients reducible to equations with constant coefficients.
7	Oct. 3-8	Their complimentary functions and particular Integrals.
8	10-15	Equations reducible to linear equations with constant co-efficients.
9	17-21	Classification of linear partial differential equations of second order. Hyperbolic, parabolic and elliptic types.
10	27-29	Revision, Problems and test
11	Oct. 31-Nov. 5	Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions.
12	7-12	Solution of linear hyperbolic equations, Monge's method for partial differential equations of second order.
13	14-19	Cauchy's problem for second order partial differential equations.
14	21-26	Characteristic equations and characteristic curves of second order partial differential equation
15	Nov.28-Dec. 3	Method of separation of variables: Solution of Laplace's equation.
16	5-10	Wave equation (one and two dimensions).
17	12-17	Diffusion (Heat) equation (one and two dimension) in Cartesian Co-ordinate system.
18	19-24	Revision, Problems and test
19	26-30	

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## Lesson Plan

<b>Name of Teacher:</b> Ms. Salaj		<b>Class:</b> B.Sc. 3 <sup>rd</sup> Year
<b>Session:</b> 2022-23 Odd Semester		<b>Subject:</b> Real Analysis
Week	Date/Month	Topic
1	Aug. 22-27	Riemann integral,
2	Aug.29-Sept.3	Integrability of continuous and monotonic functions
3	Sept. 5-10	The Fundamental theorem of integral calculus. Mean value theorems of integral calculus.
4	12-17	Improper integrals and their convergence,
5	19-24	Comparison tests, Abel's and Dirichlet's tests, Frullani's integral,
6	Sept.26- Oct.1	Integral as a function of a parameter.
7	Oct. 3-8	Continuity, Differentiability and integrability of an integral of a function of a parameter.
8	10-15	Revision, Problems and Test
9	17-21	Definition and examples of metric spaces, neighborhoods, limit points,
10	27-29	interior points, open and closed sets, closure and interior,
11	Oct. 31-Nov. 5	boundary points, subspace of a metric space, equivalent metrics,
12	7-12	Cauchy sequences, completeness,
13	14-19	Cantor's intersection theorem, Baire's category theorem,
14	21-26	contraction Principle
15	Nov.28-Dec. 3	Continuous functions, uniform continuity,
16	5-10	compactness for metric spaces, sequential compactness,
17	12-17	Bolzano-Weierstrass property, total boundedness, finite intersection property,
18	19-24	continuity in relation with compactness, connectedness, components, continuity in relation with connectedness.
19	26-30	Revision, Problems and Test

*Salaj*



## Lesson Plan

Name of Teacher: Ms. Saneh Lata

Session: 2022-23 Odd Semester

Class: B.Sc. 3<sup>rd</sup> Year

**Subject: Groups and Rings**  
**Topic**

Week	Date/Month	Topic
1	Aug. 22-27	Definition of a group with example and simple properties of groups, Subgroups and Subgroup groups
2	Aug.29-Sept.3	criteria, Generation of groups, cyclic groups, Cosets, Left and right cosets, Index of a sub-group
3	Sept. 5-10	Coset decomposition, Lagrange's theorem and its consequences, Normal subgroups,
4	12-17	Homomorphisms, isomorphisms, automorphisms and inner automorphisms of a group
5	19-24	Automorphisms of cyclic groups, Permutations groups. Even and odd permutations
6	Sept.26- Oct.1	Alternating groups, Cayley's theorem,
7	Oct. 3-8	Center of a group and derived group of a group
8	10-15	Introduction to rings, subrings,
9	17-21	integral domains and fields
10	27-29	Characteristics of a ring. Ring homomorphisms
11	Oct. 31-Nov. 5	ideals (prime, maximal) and Quotient rings,
12	7-12	Field of quotients of an integral domain.
13	14-19	Euclidean rings, Polynomial rings
14	21-26	Polynomials over the rational field,
15	Nov.28-Dec. 3	The Eisenstein's criterion, Polynomial rings over commutative rings,
16	5-10	Unique factorization domain, R unique factorization domain implies so is $R[X_1, X_2, \dots, X_n]$
17	12-17	Quotient
18	19-24	Revision and test
19	26-30	Revision and test

*Saneh Lata*

## Lesson Plan

**Name of Teacher:** Ms. Salaj

**Class:** B.Sc. 3<sup>rd</sup> Year

**Session:** 2022-23 Odd Semester

**Subject:** Numerical Analysis

Week	Date/Month	Topic
1	Aug. 22-27	Finite Differences operators and their relations. Finding the missing terms and effect of error in a difference tabular values.
2	Aug.29-Sept.3	Interpolation with equal intervals: Newton's forward and Newton's backward interpolation formulae.
3	Sept. 5-10	Interpolation with unequal intervals: Newton's divided difference.
4	12-17	Lagrange's Interpolation formulae, Hermite Formula.
5	19-24	Central Differences: Gauss forward and Gauss's backward interpolation formulae.
6	Sept.26- Oct.1	Sterling, Bessel Formula
7	Oct. 3-8	Probability distribution of random variables.
8	10-15	Binomial distribution, Poisson's distribution.
9	17-21	Normal distribution: Mean, Variance and Fitting.
10	27-29	Revision, Problems and Test
11	Oct. 31-Nov. 5	Numerical Differentiation: Derivative of a function using interpolation formulae as studied in Sections -I & II.
12	7-12	Eigen Value Problems: Power method, Jacobi's method.
13	14-19	Given's method. House-Holder's method.
14	21-26	QR method, Lanczos method.
15	Nov.28-Dec. 3	Numerical Integration: Newton-Cote's Quadrature formula. Trapezoidal rule, Simpson's one third and three-eighth rule.
16	5-10	Chebychev formula, Gauss Quadrature formula. Taylor's series method. Euler's method. Runge-Kutta Methods
17	12-17	Numerical solution of ordinary differential equations: Single step methods-Picard's method.
18	19-24	Multiple step methods; Predictor-corrector method. Modified Euler's method, Milne-Simpson's method.
19	26-30	Revision, Problems and Test

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