

# LESSON PLAN (FROM AUGUST 2022 TO DECEMBER 2022)

Name: Dr. Savita Gulia

Class: BA./BSc-I<sup>st</sup> year

Semester - I<sup>st</sup>

Subject: Mathematics

Paper Name: Algebra

Sr.No	Time Period	Syllabus
1.	<u>August 22 to Aug. 31, 2022</u>	-: Introduction to basic Concepts of algebra/maths. Define roots, coefficients, terms, variables & constant. Relations b/w the roots and coefficients of general polynomial equation in one variable. Fundamental Theorem of Algebra
2.	<u>September 01 to Sep. 10, 2022</u>	-: Solutions of polynomial equations having conditions on roots. Common roots and multiple roots. Transformation of equation. Solved all exercises of chapter-7 with examples Problems discuss of chapter 7 & 8.
3.	<u>September 11 to Sep. 20, 2022</u>	-: Define Cubic, Biquartic equations. Cardan's Method of solving a Cubic Equation. To discuss the nature of roots of cubic equation & irreducible case of Cardan's Method. Its theorem and related examples. Also discuss Descartes's Solution of the Bi-quadratic eq <sup>n</sup> . Exercises 9.1 & 9.2 Complete.
4.	<u>September 21 to Sep 30, 2022</u>	-: Test of chapter-7 (Unit-3). Ferrari's Method of solving a Biquadratic with its examples & exercise 9.3. Define Permanence & Change of Signs, Complete equation. Descartes's Rule of Sign & Complex roots. Examples and Exercise 10.1
5.	<u>October 01 to Oct 10, 2022</u>	-: Define the system of Homogeneous and Non-Homogeneous Linear Equations. Its Consistence, inconsistent & no solutions conditions. Its examples and exercises 4.1 and 4.2. Revise Unit-3 and Unit-4 along with its problems.
6.	<u>October 11 to Oct 20, 2022</u>	-: Define Orthogonal Matrix and its properties and Theorems. Also define Unitary Matrix with theorem. Define Bilinear and Quadratic forms, Linear Transformation

Define Bilinear form & its Types. Canonical form of a Bilinear form Factorizable Bilinear form its examples & exercises, Linear Transformation & Diagonalization of a Quadratic form. Lagrange's Method of Diagonalization. Test of chapter - 9 & 10. Make Assignment

**DOWNS BREAK**

From October 20-26, 2022

7. 27 October to 07 November 2022 -: Problems discuss of Unit 3, 4 and 2nd. Discuss in Assignment & submit. Revise Matrix & Determinants from class-12<sup>th</sup> book. Define its all concepts and related questions. Test taken in next week. Discuss Symmetric, skew symmetric, Hermitian & skew-Hermitian matrices.
  8. November 08 to Nov 18, 2022 -: Test taken U-2, 3 & 4. Define Rank of a matrix. Inverse of a matrix. Linear dependence and Independence of rows and columns of matrix. Row rank & Column rank of a matrix. Find Inverse by using Elementary Row & Column operation, Solved all examples of chapter-1 and ch-2 with exercises.
  9. November 19, to Nov. 30, 2022 -: Quiz held in this week. Define Eigen vectors and characteristic equation of a matrix. Minimal polynomial of a matrix. Cayley-Hamilton theorem and its use in finding inverse of a matrix. Solved its all examples and its exercise. Complete Unit -4.
  10. December 01 to Dec 10, 2022 -: Revise all questions from assignments. Solved all sample papers. Quiz Competition of Maths (Basic Concept)  
Tentative Lecture Plan.
- December 10 to Exams Start (REVISIONS) Seen ~~1/1~~

# LESSON PLAN (FROM AUGUST 2022 TO DECEMBER 2022)

Name: Dr. Santa Gulia

Subject: Mathematics

Class: BA/BSc-Ist year

Paper Name: Calculus

Semester: I<sup>st</sup>

Sr. No | Time Period

Syllabus

- 1) August 22 to Aug. 31, 2022:- Define basic Concepts of Maths i.e limit, function, Continuous fu<sup>n</sup> etc. Limit of a function, Basic properties of limits, Continuous functions and classification of discontinuities,  $\eta$  theorems & questions. Differentiability
- 2) September 01 to Sep 10, 2022:- Successive differentiation.  $\eta$  theorem of  $n$ th order, Leibnitz theorem.  $\eta$  all examples and exercises Complete. Chapter 3 Complete. Chapter-4 start. Maclaurin and Taylor series expansions.
- 3) September 11 to Sep. 20, 2022:- Problems based on above method along with its examples. Unit-I Complete. Chapter Asymptotes start, Asymptotes in Cartesian co-ordinates, intersection of Curve & its asymptotes. Problems discuss of Unit-1
- 4) September 21 to Sep. 30, 2022:- Test of Unit-I Asymptotes in polar co-ordinates. Curvature, radius of curvature for Cartesian curves, parametric curves, polar curves. Newton's method. Radius of curvature for pedal curves.
- 5) October 01 to Oct. 10, 2022:- Tangential polar equations Centre of curvature. Circle of curvature. Chord of curvature evaluates, Test for Concavity & Convexity. Pt of inflexion Multiple points. Cusps, nodes & conjugate points. Types of Cusps. Unit - 2nd Complete. Problems Discuss.

6. October 11 to Oct. 20, 2022:- Unit-3 start, Tracing of curves in Cartesian, Parametric and polar coordinates. Problems discuss of Unit-2 and its test. Examples & Exercises Complete  
Make assignment.

## DIWALI BREAK

FROM Oct. 20-26, 2022

7. October 27 to Nov. 08, 2022:- Reduction formula. Its theorem based all examples and exercises. Rectification, intrinsic equation of curve. Test of Objective questions. Examples and Exercises. Complete Unit-3.
8. November 09 to Nov 19, 2022:- Problems discuss of Unit-3  
Quadrature (area) sectional area. Area bounded by closed curves. Examples and its exercises Discuss Problems U-3
9. November 20 to Nov. 30, 2022:- Volumes and Surfaces of Solids of revolution. Theorems of Pappus and Guldinus. Problems in form of examples and exercises solve.  
Revision of Unit-3, Complete U-4.
10. December 01. to Dec. 10, 2022:- Test of U-3 & 4  
After Revisions of U-3, 4. Quiz Competition of Basic Mathematics. Tentative Lecture Plan. ~~can~~
11. December 11 to Exams Start:-

# (REVISION)

# LESSON PLAN (FROM AUGUST 2022 TO DECEMBER 2022)

Name: Dr. Santa Gulia

Class: B.A./B.Sc - 2nd year

Semester: 3rd

Subject: Mathematics

Paper Name: Statics

Sr.No	Time Period	Syllabus
1.	<u>August 22 to Aug 31, 2022 -</u>	Virtual work. Principle of Virtual Work. Two important Results. Forces which may be omitted in forming the equation of virtual work. Examples and exercises.
2.	<u>September 01 to Sep. 10, 2022 -</u>	Forces in three dimensions. Composition of couple. Poinsot's central axis. Invariants. Equations of the central axis. Wrenches. Resultant Wrench of two given wrenches. Review c-8
3.	<u>September 11 to Sep. 20, 2022 -</u>	Null lines and Null Planes. Stable, Unstable and Neutral Equilibrium. Position of Equilibrium. Conditions of stability of Equilibrium. A Body resting inside other fixed concave Body. Test ch-8 & Examples of 9ch.
4.	<u>September 21 to Sep 30, 2022 -</u>	Composition and resolution of forces. Classification of forces. Magnitude and direction of the Resultant. Components of a given force in two given Directions. Examples and exercise.
5.	<u>October 01 to Oct. 10, 2022 -</u>	Triangle Law of forces. $\lambda$ - $\mu$ Theorem. Lami's Theorem, Converse of Lami's Theorem. Polygon law of forces. Resultant of any number of concurrent and coplanar forces. Test unit-4

6. October 11 to Oct 20, 2022 -:

Conditions of Equilibrium of Concurrent forces. Equilibrium of Bodies Placed on a smooth inclined Plane. Parallel Forces. Analogue of Lami's Theorem. Centre of the Parallel forces. make assignment for H.W.

**DIWALI BREAK**

From Oct. 20-26, 2022

7. October 27 to Nov. 08, 2022 -:

Moments. Sign of Moment of a Force About a point. Varignon's Theorem. Generalization of Varignon's Theorem of Moments. Test unit 3 and 4

8. November 09 to Nov. 19, 2022 -:

Couples. Equilibrium of two Couples. Equilibrium of Couples in Parallel Planes. Resultant of Coplanar Couples. Resultant of a force and a couple. Revision and Problem discussion.

9. November 20 to Nov. 30, 2022

Analytical Conditions of Equilibrium of Co-Planar forces. Friction. Stages and kinds of friction. Co-efficient of friction. Angle of friction. Cone of friction. Test unit - 1

10. December 01 to Dec. 10, 2022

Centre of Gravity. Centre of Gravity of a Uniform Rod. Centre of Gravity of a thin Uniform Rod. Centre of Gravity of a uniform Tetrahedron. Quiz Competition. Tentative Lecture Plan

11. December 11 to Exams Start

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# LESSON PLAN (FROM AUGUST 2022 TO DECEMBER 2022)

Name: Dr. Santa Gulia  
 Class: BA./BSc- 3rd year  
 Semester: 5<sup>th</sup>

Subject: Mathematics  
 Paper Name: Numerical  
 Analysis

Sr. No	Time Period	Syllabus
1.	<u>August 22 to Aug. 31, 2022</u>	Define basic Concepts of Mathisic functions, relations, terms etc. Finite difference operators and their relations. Finding the missing terms and effect of error in a difference tabular values. Interpolation with equal intervals: Examples & Exercises. Theorems based on $\Delta, \nabla, E$ & its questions
2.	<u>September 01 to Sep. 10, 2022</u>	Newton's forward and Newton's backward interpolation formula. Interpolation with unequal intervals: Newton's divided difference. Lagrange's Interpolation formula, Hermite formula. Revise chapter-I & Complete U-I
3.	<u>September 11 to Sep 20, 2022</u>	Test of Unit - Ist, Start Central Differences: Gauss forward and Gauss's backward interpolation formula, Sterling formula. Its theorem & based all examples. Problems Discussions.
4.	<u>September 21 to Sep. 30, 2022</u>	Bessel formula and its based all examples. Complete Exercise 4.1. chapter-5 Probability Distribution. Define all important terms & solve all based questions. Binomial Distribution, Recurrence formula, Ex-5.1
5.	<u>October 01 to Oct. 10, 2022</u>	Poisson Distribution & Normal Distribution. Its based all examples and Complete exercises 5.2, 5.3. Revise chapter 4 also. Complete Unit-1 & 2.

Time Period & syllabus BA/BSc-3rd year (5th Sem)  
(Numerical Analysis)

6. October 11 to Oct 20, 2022:- chapter-6 Numerical Differentiation Start Define by using Newton's Forward Interpolation & backward Interpolation Formula, Bessel's Central Difference Formula. Its examples and exercises 6.1 Complete. Problems Discuss of U-1, 2 Make Assignment.

DIWALI BREAK

From Oct 20-26, 2022

7. October 27 to 08 Nov, 2022:- Test of Unit - 1 & 2nd chapter - 7 Eigen Value Problems start. Define all definitions Power Method, Jacobi's Method. Its based all examples and exercise 7.1 (half) Cramer's Method, House-Holder's Method
8. Nov. 09 to Nov 19, 2022:- Complete exercise 7.1. Unit - 3 Complete Problems Discuss of Unit-3. Chapter. 8 start Numerical Integration: Newton-Cote's Quadrature Formula, Trapezoidal rule. Simpson's  $\frac{1}{3}$  &  $\frac{3}{8}$  rule, Chebychev Formula, Gauss Quadrature Formula.
9. November 20 to Nov. 30, 2022:- Solve all examples related above method. Chapter 8 Complete. Chapter - 9 Numerical Sol<sup>n</sup> of ODE. Single step-method - Picard's method, Taylor's series method. Euler's method, Runge-Kutta Method, Multiple Step method. etc. Solve its examples & exercises.
10. December 01 to Dec. 10, 2022:- Problem discuss on ch-7 & 8 Unit - 4 Complete, Revision & Test Unit - 3 & 4 also, Quiz Competition of Maths (Basic). Tentative Lecturer Plan,
11. December 10 to Exams. Start

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(REVISION)

# LESSON PLAN (FROM AUGUST 2022 TO DECEMBER 2022)

Name: Dr. Santa Gulia

Subject: Mathematics

Class: B.Com - 1st year

Paper Name: Business

Semester - 1st

Mathematics-I

Sr.No	Time Period	Syllabus
1.	<u>August 22 to Aug. 31, 2022</u>	To understand all the basic concepts of maths, its operations, signs and its use. Define Sets, its types, presentation and equality of sets. Union, Intersection, Complement and Difference of sets. Its theorem, all of its examples with its exercises.
2.	In August month (Half Complete) <u>September 01, to Sep 10, 2022</u>	Define Venn Diagram, Cartesian Product of two sets, Application of Set theory. Prove De-Morgan's Laws. Solved all examples, Properties and exercise upto 3.5 with examples. Unit-1 (Logarithms & Indices) define as a basic only. Set Complete.
3.	<u>September 11 to Sep. 20, 2022</u>	Define logarithms and its formulas with examples. Solved Indices type questions Product, Quotient and Power formula of logarithms formula. Define characteristic and Mantissa, its rules and its problems. Unit-I Complete. Test Unit-I
4.	<u>September 21 to Sep 30, 2022</u>	Define data and its types. Difference b/w Primary & Secondary data. Define its merits, demerits, Classification of data. Define

Define Geographical, Chronological, Conditional, Qualitative Quantitative Classifications. Variables.

5. October 01 to Oct. 10, 2022:- Define Individual series, Frequency Distribution, Discrete Frequency Distribution. Define class Intervals, class-limits, its size, class Mark, class Frequency, Commulative Frequency. Tabulation & its Objects. Difference b/w Classification & Tabulation.

6. Oct 11. to Oct 20, 2022:- Define Line Graphs, bar diagram solved its examples & its exercise questions, Pie charts its examples and solved exercise 6.1 & 6.2. Complete Unit-4.  
Make Assignment H.W Test U-1, 4

**DIWALI BREAK**

From October 20-26, 2022.

7. October 27 to Nov. 08, 2022:- Define Factorial Notation & its examples & exercise. Fundamental Principle of Counting & its problems. Define Permutation & Combination. Circular Permutation. Do exercises

8. November 09 to Nov 19, 2022:- Define Combinations & its theorems & its examples and its exercises upto 4.8. Complete Unit-2nd Test U-2nd.

9. November 20 to Nov 30, 2022:- Define Sequences and series its examples. Define Arithmetic Progression & its properties, its examples Problems based on A.P & its sum of  $n^{\text{th}}$  terms.

10. December 01 to Dec 10, 2022:- Define Geometric Progression & its general term. Sum of first  $n^{\text{th}}$  terms its problems & exercise Test - U-3 Quiz Competition.  
Tentative Lecture Plan. **REVISIONS** seen