LESSON PLAN

October 2022 to January (up to odd session) 2023

Name of the Assistant/Associate Professor:Mrs. SURKSHA

Class and Semester: B.A. 3rd year (5th Semester)

Subject: Mathematics

Paper: Groups and Rings

OCTOBER 2022

Topics- Definition of a group with example and simple properties of groups, Subgroups and Subgroup criteria, Generation of groups, cyclic groups, Cosets, Left and right cosets, Index of a subgroup.

Learning Objective:- Students will able to learn about Group and Subgroups.

NOVEMBER 2022

Topics :- Coset decomposition, Lagrange's theorem and its consequences, Normal subgroups. Quotient groups.Homomorphisms, isomorphisms, automorphisms and inner automorphisms of a group. Automorphisms of cyclic groups. Permutation groups. Even and odd permutations. Alternating groups, Cayley's theorem, Centre of a group and derived group of a group.

First Assignment on Automorphisms of cyclic groups

Test on Lagrange's theorem and its consequences

Learning Objective:- Students will able learn about Groups.

DECEMBER 2022

Topics:- Introduction to rings, subrings, integral domains and fields, Characteristics of a ring. Ring homomorphisms, ideals (principle, prime and Maximal) and Quotient rings, Field of quotients of an integral domain.

Euclidean rings, Polynomial rings, Polynomials over the rational field. The Eisenstein's criterion of irreducibility.

Second Assignment on Euclidean rings

Learning Objective:- Students will be able to learn Rings.

JANUARY- 2023

Topics- Polynomial rings over commutative rings. Unique factorization domain. R unique factorization domain implies so is R (X_1, X_2....)

Learning Objective:- Students will able to learn about Polynomial rings

24/10/2022

LESSON PLAN

October 2022 to January (up to odd session) 2023

Name of the Assistant/Associate Professor:Mrs. SURKSHA
Class and Semester: B.A. 2nd year (3rd Semester)
Subject: Mathematics
Paper: Statics
OCTOBER 2022 **Topics-** Composition and resolution of forces. Parallel forces **Learning Objective:- Students will able to find the resultant of any no. of forces acting at a point.**
NOVEMBER 2022 **Topics :-**Moments and Couples,Analytical conditions of equilibrium of coplanar forces. Friction. Centre of Gravity. **virtual** work. Forces in three dimensions. Poinsots central axis. **First Assignment on Forces in three dimensions** **Test on Poinsots central axis.** **Learning Objective:- Students will able to find Forces in three dimensions**
DECEMBER 2022 Topics Null lines and planes. Stable and unstable equilibrium. **Second Assignment on Null lines and Planes.** **Learning Objective:- Students will be able to learn about Null lines and planes**
JANUARY- 2023 **Topics-** Wrenches. **Learning Objective:- Students will able to learn about Wrenches.**

24/10/2022

LESSON PLAN

OCTOBER 2022 to JANUARY(Up to odd Session) 2023

Name of the Assistant/Associate Professor:Mrs. SURKSHA

Class and Semester: B.A. 1ST year (1ST Semester)

Subject: Mathematics

Paper: Algebra

OCTOBER 2022

Topics- Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices. Elementary Operations on matrices. Rank of a matrices. Inverse of a matrix. Nature of the roots of an equation Descarte's rule of signs. Solutions of cubic equations
(Cardon's method). Biquadratic equations and their solutions.
(Group discussion + class test)

Learning Outcomes:- Students will able to learn the basic idea of matrices and solutions of equation .

NOVEMBER 2022

Topics - Linear dependence and Independence of rows and columns of matrices. Row rank and column rank of a matrix.
Eigenvalues, eigenvectors and the characteristic equation of a matrix. Minimal polynomial of a matrix. Cayley Hamilton theorem and its use in finding the inverse of a matrix.

First Assignment on the topic of Cayley Hamilton theorem.

Solutions of polynomial equations having conditions on roots. Common roots and multiple roots. Transformation of equations..

Learning Outcomes:- Students will able to learn the basic idea of Common roots and multiple roots and Transformation of equation .

DECEMBER 2022

Topics - Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations. Theorems on consistency of a system of linear equations.
Unitary and Orthogonal Matrices, Bilinear and Quadratic forms. Relations between the roots and coefficients of general polynomial equation in one variable.

Second Assignment on the topic of common roots and multipal roots

Solutions of polynomial equations having conditions on roots

Test on Unitary and Orthogonal Matrices.

Learning Outcomes:- Students will able to learn the basic idea of homogeneous and non–homogeneous equations .

JANUARY 2023

Topics- Relations between the roots and coefficients of general polynomial equation in one variable.

Learning Outcomes:- Students will able to learn about Algebra of Mathematics.

24/10/2022

LESSON PLAN

October 2022 to January (up to odd session) 2023

Name of the Assistant/Associate Professor:Mrs. SURKSHA

Class and Semester: B.A. 2nd year (3rd Semester)

Subject: Mathematics

Paper: Partial Differential Equations

OCTOBER 2022

Topics- Partial differential equations: Formation, order and degree, Linear and Non-Linear Partial differential equations of the first order: Complete solution, singular solution, General Solution.

Cauchy's problem for second order partial differential equations, Characteristic equations and characteristic curves of second order partial differential equation

Learning Objective:- Students will able to solve second order partial differential equations

NOVEMBER 2022

Topics Solution of Lagrange's linear equations

First Assignment on the topic of Lagrange's linear equations

Partial differential eqution with variable co-efficients reducible to equations with constantcoefficients, their complimentary functions and particular Integrals, Equations reducible to linear equations with constant co-efficient.s .

Classification of linear partial differential equations of second order, Hyperbolic, parabolic and elliptic types, Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions **Learning Objective:- Students will able to solve Hyperbolic,**
parabolic and elliptic type equations

DECEMBER 2022

Topics

Solution of linear hyperbolic equations,

Second Assignment on the topic of Canonical (Normal) forms.

Monge's method for partial differential equations of second order. Method of separation of variables: Solution of Laplace's equation, Wave equation (one and two dimensions) Charpit's general method of solution.

Compatible systems of first order equations, Jacobi's method..

linear partial differential equations of second and higher orders, Linear and non-linear homogenious and non-homogenious equations with constant co-efficients,

Learning Objective:- Students will be able to learn about homogenious and non-homogenious equations

JANUARY- 2023

Topics-

Test on Linear and non-linear homogenious and non-homogenious equations with constant co-efficients.

Diffusion (Heat) equation (one and two dimension) in Cartesian Coordinate system.

Learning Objective:- Students will able to solve Heat equations and wave equations.

24/10/2022