

Name of Assistant Professor: Jaiprakash
Class and Section: B.Sc 6th Semester
Subject: Maths (Linear Algebra)
Lesson Plan: (21 March -30 June
2022)

Week 1 : [21 March to 26th March 2022]
Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space
Week 2:[28th March to 2nd March 2022]
Finitely generated vector space, Existence theorem for basis of a finitely generated vector space,
Week 3:[4th April to 9th April 2022]
Finite dimensional vector spaces, Invariance of the number of elements of bases sets, Dimensions, Quotient space and its dimension.
Week 4:[11th April to 16th April 2022]
Homomorphism and isomorphism of vector spaces, Linear transformations and linear forms on vector spaces,
Week 5: [18th April to 23rd April 2022]
Vector space of all the linear transformations Dual Spaces, Bidual spaces, annihilator of subspaces of finite dimensional vector spaces,
Week 6: [25th April to 30th April 2022]
Null Space, Range space of a linear transformation, Rank and Nullity Theorem,
Week 7: [2nd May to 7th May 2022]
Algebra of Linear Transformation, Minimal Polynomial of a linear transformation
Week 8: [9th May to 14th May 2022]
Singular and non-singular linear transformations, Matrix of a linear Transformation,
Week 9: [16th May to 21st May 2022]
Change of basis, Eigen values and Eigen vectors of linear transformations.
Week 10: [23rd May to 28th May 2022]
Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements,
Week 11: [30th May to 4th June 2022]
Orthogonal sets and Basis, Bessel's inequality for finite dimensional vector spaces, GramSchmidt, Orthogonalization process,
Week 12: [6th June to 11th June 2022]
Adjoint of a linear transformation and its properties, Unitary linear transformations.
Week 13: [13th June to 18th June 2022]
Revision of Unit - 1
Week 14: [20th June to 25th June 2022]
Revision of Unit - 2 & 3
Week 15: [27th June to 30th June 2022]

Name of Assistant Professor: Jaiprakash
Class and Section: B.Sc 2nd Semester
Subject: Maths (O.D.E)
Lesson Plan: (21 March -30 June 2022)

Week 1 : [21 March to 26th March 2022]
Geometrical meaning of a differential equation. Exact differential equations,
Week 2:[28th March to 2nd March 2022]
Integrating factors. First order higher degree equations solvable for x,y,p
Week 3:[4th April to 9th April 2022]
p Lagrange's equations, Clairaut's equations.
Week 4:[11th April to 16th April 2022]
Equation reducible to Clairaut's form. Singular solutions.
Week 5: [18th April to 23rd April 2022]
Orthogonal trajectories: in Cartesian coordinates and polar coordinates.
Week 6: [25th April to 30th April 2022]
Self orthogonal family of curves. Linear differential equations with constant coefficients.
Week 7: [2nd May to 7th May 2022]
Homogeneous linear ordinary differential equations. Equations reducible to homogeneous
Week 8: [9th May to 14th May 2022]
Linear differential equations of second order: Reduction to normal form
Week 9: [16th May to 21st May 2022]
Transformation of the equation by changing the dependent variable/ the independent variable.
Week 10: [23rd May to 28th May 2022]
Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation.
Week 11: [30th May to 4th June 2022]
Method of variations of parameters. Method of undetermined coefficients.
Week 12: [6th June to 11th June 2022]
Ordinary simultaneous differential equations. Solution of simultaneous differential equations involving operators $x (d/dx)$ or $t (d/dt)$ etc
Week 13: [13th June to 18th June 2022]
Simultaneous equation of the form $dx/P = dy/Q = dz/R$. Total differential equations. Condition for $Pdx + Qdy + Rdz = 0$ to be exact.
Week 14: [20th June to 25th June 2022]
method of solving $Pdx + Qdy + Rdz = 0$ by taking one variable constant. Method of auxiliary equations
Week 15: [27th June to 30th June 2022]
Revision of complex problem