VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:I **Subject-REAL ANALYSIS**
Session: 2016-17 **Theory**
Branch/Course **Name of Faculty: Dr. A.K.SAHOO**

Period	Module/ Number	Topic to be covered	Remarks
1	I	Sets, Relation, Function	
2	I	Axioms for Real numbers, Axioms of Choice and equivalents	
3	I	Cardinality, Countability	
4	I	Elements of set theory for metric space and in particular for R^n	
5	I	Bolzano-Weiestrass Theorem	
6	I	Heine-Borel theorems	
7	I	sequences and series of real numbers	
8	I	Convergence of Sequence	
9	I	Convergence of Series	
10	I	Cauchy criterion for convergence	
11	II	Real valued function	
12	II	Properties of real valued continuous function on R^n	
13	II	Uniform continuity of Sequence	
14	II	Uniform continuity Sequences	
15	II	Uniform continuity of series of functions	
16	II	Uniform continuity of series of functions Uniform continuity of series of functions	
17	II	Uniform convergence	
18	II	Uniform convergence	
19	II	Power series	
20	II	Weiestrass approximation theorem.	
21	III	Differentiation	
22	III	Reimann-Stieltjes integral of real valued function w.r.t a monotone function	
23	III	Reimann-Stieltjes integral of real valued function w.r.t a monotone function, Cont.	
24	III	Properties of Reimann-Stieltjes integral(Linearity, Integration by parts)	
25	III	Properties of Reimann-Stieltjes integral(Change of variables)	
26	III	Term by term integration	
27	III	Term by term integration, Cont.	
28	III	Differentiation under the integral sign	
29	III	Integration under the integral sign	
30	III	Integration under the integral sign, Cont.	
31	IV	Function of several variables	
32	IV	Limit of function of several variables	

33	**IV**	Continuity of function of several variables	
34	**IV**	Differentiability	
35	**IV**	Theorem based on differentiability	
36	**IV**	Pre-requisites of Inverse Function Theorem	
37	**IV**	Implicit function theorem	
38	**IV**	Implicit function theorem, Cont.	
39	**IV**	Maxima and Minima of real valued function	
40	**IV**	constrained maxima and minima	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:II **Subject-Ordinary Differential Equations**
Session: 2016-17 **Theory**
Branch/Course **Name of Faculty: Dr. S Mohapatra**

Period	Module/ Number	Topic to be covered	Remarks
1	I	Quick Review of linear differential Equations of Higher Order, Wronskian.	
2	I	System of first order equations,	
3	I	Existence and Uniqueness theorems	
4	I	Existence and Uniqueness theorems	
5	I	Fundamental Matrix	
6	I	Fundamental Matrix	
7	I	Homogeneous and Non Homogeneous linear systems with constant Coefficients	
8	I	Homogeneous and Non Homogeneous linear systems with constant Coefficients	
9	I	Linear system with periodic Coefficients	
10	I	Linear system with periodic Coefficients	
11	II	Successive approximation Picard's Theorem	
12	II	Successive approximation Picard's Theorem	
13	II	Uniqueness of solutions,	
14	II	Uniqueness of solutions	
15	II	Continuation and dependence on Initial conditions,	
16	II	Continuation and dependence on Initial conditions,	
17	II	Existence of solutions in the large	
18	II	Existence of solutions in the large	
19	II	Existence and uniqueness of solution of systems	
20	II	Existence and uniqueness of solution of systems	
21	III	Oscillations of second Order Equations	
22	III	Oscillations of second Order Equations	
23	III	Fundamental Results	
24	III	Fundamental Results	
25	III	Sturm's Comparison theorem	
26	III	Sturm's Comparison theorem	
27	III	Solving problems	
28	III	Oscillations of $x'' + a(t)x = 0$	
29	III	Oscillations of $x'' + a(t)x = 0$	
30	III	Solving problems	
31	IV	Boundary Value Problems :- Introduction	
32	IV	Strum Liouville's Problem	
33	IV	Strum Liouville's Problem	
34	IV	Solving problems	
35	IV	Green's functions	
36	IV	Green's functions	
37	IV	Solving problems	
38	IV	Picard's theorem	
39	IV	Picard's theorem	
40	IV	Solving problems	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:II **Subject-Measure Theory and Integration**

Session: 2016-17 **Theory**

Branch/Course **Name of Faculty: Dr. P.K.JENA**

Period	Module/ Number	Topic to be covered	Remarks
1	I	Sigma Algebra of Sets, Borel sets of **R**	
2	I	Lebesgue outer measure and its properties	
3	I	Lebesgue outer measure and its properties	
4	I	Sigma Algebra of Measurable sets in **R**	
5	I	Non-measurable sets	
6	I	Measurable sets which is not a Borel set, Lebesgue measure and its properties	
7	I	Cantor set and its properties	
8	I	Measurable functions Simple function	
9	I	Integration of Nonnegative functions	
10	I	Riemann and Lebesgue Integration	
11	II	Abstract measure spaces	
12	II	Extension of a measure	
13	II	Uniqueness of a measure	
14	II	Completion of a measure	
15	II	Integration with respect to a measure	
16	II	Monotone convergence theorem	
17	II	Monotone convergence theorem	
18	II	Fatou's Lemma	
19	II	Lebesgue Dominated convergence theorem	
20	II	Lebesgue Dominated convergence theorem	
21	III	Modes of convergence,Point wise convergence and convergence in Measure	
22	III	Convergence in mean	
23	III	convergence diagrams	
24	III	convergence diagrams	
25	III	Counter examples of Convergence.	
26	III	Egorov's theorem.	
27	III	Egorov's theorem	
28	III	Differentiation of monotone functions	
29	III	Lebesgue Differentiation theorem, Absolute continuity	
30	III	Lebesgue Differentiation theorem, Absolute continuity	
31	IV	Complex and signed measure	
32	IV	Hahn decomposition theorem	
33	IV	Jordan decomposition theorem	
34	IV	Jordan decomposition theorem	
35	IV	Radon-Nikodym theorem	
36	IV	Radon-Nikodym theorem	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:II | **Subject- Numerical Analysis**
Session: 2016-17 | **Theory**
Branch- Applied Mathematics | **Name of Faculty: Dr. S.K. Padhan**

Period	Module/ Number	Topic to be covered	Remarks
1	**I**	An overview on number system, Error analysis	
2	**I**	Numerical solution, stability of numerical algorithm	
3	**I**	Error Analysis, floating point representation and approximations, different types of error	
4	**I**	Solution of nonlinear equations: bisection method, secant method, regulafalsi mthod, geometrical representation, error analysis	
5	**I**	Newton's method, geometrical representation, error analysis, advantages and disadvantages	
6	**I**	Rate of convergence of above methods	
7	**I**	General iteration methods, fixed point iterations	
8	**I**	Convergence of first order iterations with several examples	
9	**I**	Iteration methods based on second degree: Muller method, Chebysev method	
10	**I**	Rate of convergences of above two methods	
11	**II**	Introduction and existence and uniqueness of interpolation	
12	**II**	Lagrange interpolation, geometrical representation, error in Lagrange interpolation	
13	**II**	Disadvantages of Lagrange interpolation, Newton divided difference interpolation	
14	**II**	Finite difference operators and relations between them	
15	**II**	Finite difference interpolation: Newton forward and backward difference interpolation	
16	**II**	Hermite interpolation, error analysis	
17	**II**	Piecewise and spline interpolation	
18	**II**	Piecewise and spline interpolation	
19	**II**	Differentiation: Methods based on interpolation (linear and quadratic)	
20	**II**	Uniform nodals, Methods based on finite differences	
21	**III**	Methods based on undetermined co-efficients, Optimum choice of step length	
22	**III**	Introduction on integration	
23	**III**	Gauss quadratue rule	
24	**III**	Trapezodial rule, error analysis	
25	**III**	Simpson's $1/3^{rd}$ rule, error analysis	
26	**III**	Gauss Legendre integration, Lobatto integration, error analysis	
27	**III**	Radon integration method, Gauss-Chebysev integration, error calculation	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA
LESSON PLAN

Semester:II **Subject-STATISTICAL METHOD**
Session: 2016-17 **Theory**
Branch/Course **Name of Faculty: Dr. A. K. SAHOO**

Period	Module/ Number	Topic to be covered	Remarks
1	I	Random variable	
2	I	Expectations	
3	I	Moment Generating functions	
4	I	Characteristic functions	
5	I	Properties of Characteristic functions	
6	I	Statement of inversion theorem and its application	
7	I	Derivation of Characteristic function	
8	I	Derivation of Characteristic function, Cont.	
9	I	Moments , Central moments	
10	I	Basic discrete distributions	
11	II	Basic discrete distributions and their properties (Bernoulli)	
12	II	Basic discrete distributions and their properties (Binomial)	
13	II	Basic discrete distributions and their properties (Poisson)	
14	II	Basic discrete distributions and their properties (Negative Binomial)	
15	II	Basic discrete distributions and their properties (Geometric)	
16	II	Basic discrete distributions and their properties (Hyper geometric)	
17	II	Basic discrete distributions and their properties (uniform distribution)	
18	II	Characteristic and moment generating function	
19	II	Characteristic and moment generating function, Cont.	
20	II	Sampling distribution of sum of observations for discrete distributions	
21	III	Continuous Random Variable	
22	III	Continuous distributions ,pdf,cdf.	
23	III	Continuous distributions ,pdf,cdf examples	
24	III	Rectangular distribution	
25	III	Gamma distribution	
26	III	Beta distribution	
27	III	Normal distribution	
28	III	Cauchy distribution	
29	III	Exponential Lognormal distribution	
30	III	Sampling distributions	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:II **Subject- MATHEMATICAL MODELLING**
Session: 2016-17 **Theory**
Branch/Course **Name of Faculty: Dr. J. P. PANDA**

Period	Module/ Number	Topic to be covered	Remarks
1	**I**	Need , Techniques of Mathematical Modelling	
2	**I**	Classification of Mathematical Modelling	
3	**I**	Characteristics of Mathematical Modelling	
4	**I**	Mathematical Modelling Through 1st order ODE	
5	**I**	Related Problems of 1st order ODE	
6	**I**	Linear growth and Decay Model	
7	**I**	Related Problems of Decay Model	
8	**I**	Linear growth and Decay Model	
9	**I**	Compartment model	
10	**I**	Compartment model problems	
11	**II**	Modelling of Geometrical Problems	
12	**II**	Modelling of Geometrical Problems	
13	**II**	Mathematical Modelling Through system of First order ODE	
14	**II**	Mathematical Modelling Through system of First order ODE	
15	**II**	Problems on Modelling Through system of First order ODE	
16	**II**	Modelling on Population Dynamics	
17	**II**	Problems on Population Dynamics	
18	**II**	Modelling on Epidemics	
19	**II**	Modelling on compartment Models	
20	**II**	Modelling in Economics	
21	**III**	Modelling in Economics	
22	**III**	Modelling in Medicine	
23	**III**	Modelling in Medicine	
24	**III**	Modelling in Arms race	
25	**III**	Modelling in Arms race	
26	**III**	Linear growth and Decay Model	
27	**III**	Linear growth and Decay Model	
28	**III**	Compartment model	
29	**III**	Problems on Compartment model	
30	**III**	Modelling in Arms race, Battles	
31	**IV**	Modelling in durational trades.	
32	**IV**	Mathematical Modelling through Second Order O.D.E	
33	**IV**	Modelling of Planetary motion	
34	**IV**	Keplers laws and its verification through Mathematical Modelling	
35	**IV**	Modelling,circular motion	
36	**IV**	Circular motion	
37	**IV**	Circular motion of satellite.	

38	**IV**	Elliptic motion of satellite.	
39	**IV**	Related problems **on** Modelling through Second Order O.D.E	
40	**IV**	Related problems **on** Modelling through Second Order O.D.E	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:III **Subject- Linear Algebra**

Session: 2016-17 **Theory**

Branch/Course **Name of Faculty: Dr. J. P. PANDA**

Period	Module/ Number	Topic to be covered	Remarks
1	**I**	Vector spaces over fields	
2	**I**		
3	**I**	Subspaces, bases and dimension.	
4	**I**	Problems on Subspaces, bases and dimension	
5	**I**	Systems of linear equations, Gaussian elimination	
6	**I**	Rank of matrices	
7	**I**	Linear transformations	
8	**I**	Representation of linear transformations by matrices	
9	**I**	Rank-nullity theorem	
10	**I**	Duality and transpose	
11	**II**	Determinants, Laplace expansions	
12	**II**	Cofactors, adjoint, Cramer's Rule	
13	**II**	Eigenvalues and eigenvectors	
14	**II**	Eigenvalues and eigenvectors	
15	**II**	Characteristic polynomials	
16	**II**	Minimal polynomials	
17	**II**	Cayley-Hamilton Theorem	
18	**II**	Triangulation of matrices	
19	**II**	Diagonalization of matrices	
20	**II**	Rational canonical form	
21	**III**	Jordan canonical form	
22	**III**	Inner product spaces	
23	**III**	Problems on Inner product spaces	
24	**III**	Gram-Schmidt orthonormalization	
25	**III**	Problems on Gram-Schmidt orthonormalization	
26	**III**	Orthogonal projections	
27	**III**	Linear functionals and adjoints	
28	**III**	Problems on linear functionals	

29	**III**	Hermitian, self-adjoint operators	
30	**III**	Unitary and normal operators	
31	**IV**	Spectral Theorem for normal operators	
32	**IV**	Problems on operators	
33	**IV**	Rayleigh quotient, Min-Max Principle	
34	**IV**	Bilinear forms	
35	**IV**	Problems on bilinear forms	
36	**IV**	Symmetric and skew-symmetric bilinear forms	
37	**IV**	Real quadratic forms	
38	**IV**	Problems on	
39	**IV**	Sylvester's law of inertia	
40	**IV**	Positive definiteness	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:III **Subject-Partial Diff. Eqns.**
Session: 2016-17 **Theory**
Branch/Course **Name of Faculty: Dr. S Mohapatra**

Period	Module/ Number	Topic to be covered	Remarks
1	I	Meaning of Partial differential equation,	
2	I	Classification of first order Partial differential equations,	
3	I	Semi-linear and quasi-linear equations	
4	I	Semi-linear and quasi-linear equations	
5	I	Pfaffian differential equations	
6	I	Pfaffian differential equations	
7	I	Lagrange's method	
8	I	Compatible systems	
9	I	Charpit's method	
10	I	Jacobi's method	
11	II	Integral surfaces passing through a given curve	
12	II	Integral surfaces passing through a given curve	
13	II	Cauchy problem	
14	II	Cauchy problem	
15	II	Method of characteristics for quasi-linear and non linear partial differential equation	
16	II	Monge cone,	
17	II	Characteristic strip	
18	II	First order non-liner equations in two independent variables	
19	II	Solving problems	
20	II	Complete integral.	
21	III	Linear Second order partial Differential Equations : Origin of second order p.d.e's,	
22	III	Classification of Second order Partial Differential Equations.	
23	III	One dimensional Wave equation	
24	III	One dimensional Wave equation	
25	III	Vibration of an infinite string	
26	III	D'Alembert's solution	
27	III	Vibrations of a semi finite string	
28	III	Vibrations of a string of finite length	
29	III	Existence and uniqueness of solution	
30	III	Riemann method	
31	IV	Laplace equation, Boundary value problems	
32	IV	Maximum and minimum principles, Uniqueness and continuity theorems	
33	IV	Dirichilet problem for a circle, Dirichlet problem for a circular annulus	
34	IV	Neumann problem for a circle	
35	IV	Theory of Green's function for Laplace equation	
36	IV	Heat equation, Heat conduction problem for an infinite rod	
37	IV	Heat conduction in a finite rod	
38	IV	Existence and uniqueness of the solution	
39	IV	Classification in higher dimension, Kelvin's inversion theorem	
40	IV	Equipotential surfaces.	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester:II **Subject-Ordinary Diff. Eqns.**
Session: 2016-17 **Theory**
Branch/Course **Name of Faculty: Dr. S Mohapatra**

Period	Module/ Number	Topic to be covered	Remarks
1	**I**	Quick Review of linear differential Equations of Higher Order, Wronskian.	
2	**I**	System of first order equations,	
3	**I**	Existence and Uniqueness theorems	
4	**I**	Existence and Uniqueness theorems	
5	**I**	Fundamental Matrix	
6	**I**	Fundamental Matrix	
7	**I**	Homogeneous and Non Homogeneous linear systems with constant Coefficients	
8	**I**	Homogeneous and Non Homogeneous linear systems with constant Coefficients	
9	**I**	Linear system with periodic Coefficients	
10	**I**	Linear system with periodic Coefficients	
11	**II**	Successive approximation Picard’s Theorem	
12	**II**	Successive approximation Picard’s Theorem	
13	**II**	Uniqueness of solutions,	
14	**II**	Uniqueness of solutions	
15	**II**	Continuation and dependence on Initial conditions,	
16	**II**	Continuation and dependence on Initial conditions,	
17	**II**	Existence of solutions in the large	
18	**II**	Existence of solutions in the large	
19	**II**	Existence and uniqueness of solution of systems	
20	**II**	Existence and uniqueness of solution of systems	
21	**III**	Oscillations of second Order Equations	
22	**III**	Oscillations of second Order Equations	
23	**III**	Fundamental Results	
24	**III**	Fundamental Results	
25	**III**	Sturm’s Comparison theorem	
26	**III**	Sturm’s Comparison theorem	
27	**III**	Solving problems	
28	**III**	Oscillations of $x'' + a(t)x = 0$	
29	**III**	Oscillations of $x'' + a(t)x = 0$	
30	**III**	Solving problems	
31	**IV**	Boundary Value Problems :- Introduction	
32	**IV**	Strum Liouville’s Problem	
33	**IV**	Strum Liouville’s Problem	
34	**IV**	Solving problems	
35	**IV**	Green’s functions	
36	**IV**	Green’s functions	
37	**IV**	Solving problems	
38	**IV**	Picard’s theorem	
39	**IV**	Picard’s theorem	
40	**IV**	Solving problems	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester: III **Subject-: Functional Analysis Theory**
Session: 2016-17
Branch/Course: Applied Mathematics **Name of Faculty: Dr. S. K.Paikray**

Class No.	**Module** No.	**Topic to be covered**	**Remarks/Sgn of Faculty Member**
1	I	Introduction to Functional Analysis, Abstract space.	
2	I	Review of Linear Algebra (metric space), Basis and Dimension.	
3	I	Metric space, Example of metric space, Discrete metric space	
4	I	Further example, Sequence space.	
5	I	Holder inequality & Minkowski's inequality in l^{p-} space	
6	I	L^p space and Holder Minkowski's inequality in L^{p-} space	
7	I	Completeness of L^p & l^p- space.	
8	I	Example of Complete space.	
9	I	Normed linear space and introduction to Banach space	
10	I	Inner product space and Hilbert space.	
11	I	Properties of NLS and IPS.	
12	I	Continuity of Linear maps.	
13	I	Discussion of problems.	
14	II	Details of Hilbert space, examples.	
15	II	Orthogonal and orthonormal sets.	
16	II	Grahm schmidth orthonormal set.	
17	II	Orthonormal polynomials, problem discussion.	
18	II	Fourier expansion, even and odd function, arbitrary period.	
19	II	Problem discuss of Fourier series and orthogonal function.	
20	II	Bessel inequality and Parseval's equality	
21	II	Orthonormal basis, problem discussion.	
22	II	Direct sum and projection.	
23	II	Projection theorem and doubt discussion.	
24	II	Riesz representation theorem.	

25	III	Details of Banach space, examples.	
26	III	Hahn Banach theorem.	
27	III	Baire's category theorem.	
28	III	Open mapping theorem.	
29	III	Closed graph theorem.	
30	III	Uniform boudedness principle.	
31	III	Dual of L^P space.	
32	III	Transpose of L^P space, and C [a, b] space.	
33	III	Reflexivity, Problem discussion.	
34	IV	Bounded linear operator on Banach - space.	
35	IV	Banach algebra, Banach limit, examples.	
36	IV	Spectrum of a bounded operator, Resolvant.	
37	IV	Compact and connected sets	
38	IV	Compact operators on Banach spaces	
39	IV	Spectrum of compact operators	
40	IV	Elementary ideas on integral equations	
41	IV	Unbounded Operators, problems discussion	
42	IV	Fixed point theorems	
43	IV	Problems discussion.	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester: IV **Subject: Graph Theory**
Session: 2016-17 **Theory**
Branch/Course: Applied Mathematic **Name of Faculty: Dr. S. K.Paikray**

Class No.	**Module** No.	**Topic to be covered**	**Remarks/Sgn of Faculty Member**
1	I	Introduction to Graph Theory.	
2	I	Definition and Examples, Special Graphs.	
3	I	Connectedness Walk, Path and circuits.	
4	I	Discussion of Theorems.	
5	I	Discussion of Theorems and problems.	
6	I	Konigsberg bridge problem, Eulerian Path and circuits.	
7	I	Necessary and sufficient condition for Eulerian Path and circuits.	
8	I	Discussion of Theorems and problems.	
9	I	Hamiltonian Path and circuits.	
10	I	Discussion of Theorems and problems.	
11	I	Some applications of Graph Theory.	
12	II	Introduction to Trees, Basic Terminologies.	
13	II	Discussion of elementary Theorems.	
14	II	Rooted trees, binary trees, Problems discussion.	
15	II	Spanning trees, Prims and Kruskal’s algorithim	
16	II	Discussion of Theorems and problems.	
17	II	Cut sets, bridge, cut vertex, Fundamental cut-sets.	
18	II	Fundamental circuits , Theorem discussion.	
19	II	Discussion of Theorems and problems.	
20	II	Network flows, Max flow and min cut theorem.	
21	II	Problems discussion.	
22	II	1-isomorphism, 2-isomorphism.	
23	III	Planar graphs, Kuratowski two non planar graphs.	
24	III	Euler’s Formula; proof.	

25	III	Corollaries and associated Theorems.	
26	III	Non planarity of $k_{3,3}$ *and* k_5.	
27	III	Detection of planarity.	
28	III	Geometric dual: Examples and discussion of problems	
29	III	Thickness and crossing; Examples.	
30	III	Discussion of Theorems and problems.	
31	IV	Coloring of Graphs, chromatic number.	
32	IV	Chromatic numbers of some standard graphs.	
33	IV	Discussion of Theorems and problems.	
34	IV	Coloring of dual Graphs	
35	IV	Discussion of Theorems.	
36	IV	Discussion of Theorems and problems.	
37	IV	Compact and connected sets	
38	IV	Four color problem.	
39	V	Directed graph, Basic Terminologies. Digraphs and binary relations, Euler digraphs.	
40	V	In and out degrees, theorems discussion.	
41	V	Unbounded Operators, problems discussion	
42	V	Isomorphism of digraphs, discussion of problems.	
43	V	Adjacency and incidence matrix.	
44	V	Connected digraphs; Strongly connected graphs.	
45	V	Binary relations & diagraphs, properties.	

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

LESSON PLAN

Semester: IV **Subject-: Operations Research Theory**

Session: 2016-17

Branch/Course: Applied Mathematics **Name of Faculty: Dr. S. K.Paikray**

Class No.	**Module** No.	**Topic to be covered**	**Remarks/Sgn of Faculty Member**
1	I	Introduction to Game Theory, basic terminologies.	
2	I	Games with saddle points, maximin and minimax criterion.	
3	I	Two person and zero sum games, problems discussion.	
4	I	Games without saddle points.	
5	I	Dominance rule and problems discussion.	
6	I	Graphical methods in solving 2 x n and m x 2 pay off matrices.	
7	I	Solution of games by simplex methods.	
8	I	Sequencing Problems, basic assumptions and terminologies.	
9	I	n – jobs and 2 machine problems.	
10	I	n – jobs and k machine problems.	
11	I	Problems discussion.	
12	I	2 – jobs and k - machine problems; Graphical methods.	
13	I	Discussion of problems.	
14	II	Introduction to Dynamic Programming.	
15	II	State and Stage, other basic terminologies.	
16	II	DPP algorithms and characteristics.	
17	II	Examples and Problems discussion.	
18	II	Problems discussion.	
19	II	Solution of DPP by technique of LPP.	
20	II	Forward computation method.	
21	II	Backward computation method.	
22	II	Discussion of mixed type problems	
23	II	Problem solving and discussion of doubts.	
24	III	Introduction to Integer Programming; cases pure and mixed type problems.	

25	III	Bnach and Bound Algorithm for solving IPP.	
26	III	Solution of problems (Max type).	
27	III	Solution of problems (Min type).	
28	III	Solution of problems (Mixed type).	
29	III	Gomory's cutting plane Method for solution of IPP.	
30	III	Examples and Problem solving.	
31	III	Network programming; Basic terminologies, rules of construction of net work.	
32	III	Critical path method; Problem discussion.	
33	III	PERT; Problem discussion.	
34	III	Comparison between PERT and CPM.	
35	IV	Nonlinear Programming; unconstrained and constrained NLPP.	
36	IV	Convexity and concavity; Lagrange multipliers and NLPP wiyth all equality constraints.	
37	IV	Compact and connected sets	
38	IV	Kuhn Tucker Conditions and Examples discussion.	
39	IV	Solution of problems.	
40	IV	Quadratic Programming; Hessian matrix, positive and negative definite matrix.	
41	IV	Wolfe's modified Simplex method; discussion of problems.	
42	IV	Beale's method; discussion of problems.	
43	IV	Problems discussion and doubt clearing.	