

Lesson Plan

Name of the Faculty : Dr. Manjit Singh

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : Second Semester.

Subject : Number Theory and Trigonometry (MAT-212H).

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Revisit to number system, prime number, divisibility of positive integers.
L-2	Well ordering principle, Division algorithm.
L-3	Evaluation of GCD using Division algorithm
L-4	Problems based on divisibility and/or G.C.D.
L-5	Fundamental Theorem of Arithmetic.
L-6	Introduction to congruence relation on integers, its equivalence classes and properties.
L-7	Linear congruences and their solutions.
L-8	Fermat's Theorem and Wilson Theorem
L-9	Applications of Fermat and Wilson Theorem
L-10	Linear Diophantine Equations and their solutions.
	CLASS TEST
L-11	Introduction of Euler phi function and others arithmetic functions
L-12	Introduction to Complete Residue System and Residue System modulo m .
L-13	Euler's generalisation of Fermat's Theorem
L-14	Chinese remainder theorem and its applications
L-15	Quadratic residues, non-residues
L-16	Legendre Symbols, Gauss reciprocity law
L-17	Problems related to obtain highest prime powers using Greatest integer functions.
L-18	Results based on $d(n)$ and $\sigma(n)$ functions
L-19	Mobius function and Mobius inversion function
L-20	Problems on the above defined multiplicative functions.
	CLASS TEST
L-21	De Moivre's Theorem and its consequences
L-22	Roots of a complex number
L-23	Solutions of equations using De Moivre's theorem

L-24	Expressions of $\cos n\theta$ and $\sin n\theta$ in terms of $\cos\theta$ and/or $\sin\theta$. Deduction of the expression of $\tan n\theta$.
L-25	Formation of equations when its roots are given.
L-26	Expansions of $\cos^n \theta$, $\sin^n \theta$ and $\cos^n \theta \sin^n \theta$.
L-27	Exponential functions and their properties
L-28	Laws of Logarithms of complex numbers
L-29	Hyperbolic functions $\cosh\theta$ and $\sinh\theta$
L-30	Real and imaginary parts of circular and hyperbolic functions.
CLASS TEST	
L-31	Inverse circular functions of complex numbers, the principal value and the general value.
L-32	Inverse Hyperbolic functions, expressions of these functions in terms of logarithms.
L-33	Relations between inverse circular and inverse hyperbolic functions.
L-34	Gregory' series and evaluation of π .
L-35	Some applications of these functions to obtain expansions of some trigonometric functions.
L-36	Summation of series, Sine series with n angles are in Arithmetic Progression (A.P.).
L-37	Cosine series with n angles are in Arithmetic Progression (A.P.)
L-38	Method of difference, Method of C-IS
L-39	Series depending upon exponential, sine, cosine, logarithmic, Gregory series etc.
L-40	Method of hyperbolic series.
CLASS TEST	

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Prof. R. C. Nautiyal.

Discipline : M.Sc. Mathematics(Dual Degree).

Semester : Second Semester.

Subject : Ordinary differential Equations-MAT214H.

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Ordinary Differential Equations along with revision.
L-2	Exact Differential Equation.
L-3	EDE continued.
L-4	-----do-----
L-5	First order Higher degree Differential Equations.
L-6	FOHDE continued
L-7	-----do-----
L-8	Lagrange's and Clairut's Equations.
L-9	Reduction to Lagrange's and Clairut's Equations.
L-10	Singular Solutions
	CLASS TEST
L-11	Orthogonal Trajectories.
L-12	Orthogonal Trajectories Continued.
L-13	-----do-----
L-14	Linear Differential Equations With Constant Coefficients.
L-15	LDE with Constant Coefficients Continued.
L-16	-----do-----
L-17	-----do-----
L-18	Homogeneous Linear Differential Equations.
L-19	HLDE Continued.
L-20	Equations Reducible to HLDE
	CLASS TEST
L-21	Linear Differential Equations of second order
L-22	LDE of Second Order Continued
L-23	-----do-----
L-24	-----do-----
L-25	Non Homogeneous Linear Differential equations
L-26	Non Homogeneous LDE Continued

L-27	Reduction of Order of a Differential Equation.
L-28	Reduction of a Differential equation Continued.
L-29	Method of Variation of Parameters.
L-30	Method of Undetermined Coefficients.
	CLASS TEST
L-31	Ordinary Simultaneous Differential Equations
L-32	Ordinary Simultaneous Differential Equations Continued
L-33	-----do-----
L-34	-----do-----
L-35	Total Differential Equations.
L-36	Total Differential Equations Continued.
L-37	-----do-----
L-38	-----do-----
L-39	Method of Auxiliary Equation
L-40	Method of Auxiliary Equation Continued.
	CLASS TEST

Lesson Plan

Name of the Faculty : Prof. R. C. Nautiyal.

Discipline : B.Tech. Chemical Engg.

Semester : Second Semester.

Subject : Mathematics-II.

Lesson Plan duration : 40 Lectures (From January 2018 to April 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Ordinary Differential Equations along with revision.
L-2	Exact Differential Equation.
L-3	EDE continued.
L-4	-----do-----
L-5	Applications of First order Differential Equations.
L-6	Applications continued
L-7	Linear Differential Equations of second and Higher order
L-8	-----Continued-----
L-9	Cauchy's and Legendre's Equations.
L-10	Simultaneous Linear Differential Equations
	CLASS TEST
L-11	Introduction of Transforms and Laplace Transforms.
L-12	Properties of Laplace Transforms.
L-13	-----continued-----
L-14	Laplace Transforms of Derivatives and Integrals.
L-15	-----Continued-----.
L-16	Laplace Transforms of functions multiplied by t^n
L-17	Laplace Transforms of functions divided by t^n
L-18	Laplace Transforms of Unit step and impulse Functions
L-19	Convolution Theorem.
L-20	Application of Laplace Transforms to Linear differential Equations with constant Coefficients.
	CLASS TEST
L-21	Functions of Complex Variable Definitions and introduction
L-22	Exponential, trigonometric, Logarithmic and Hyperbolic functions

L-23	-----Continued-----
L-24	Limits and Continuity of functions
L-25	Differentiability and Analyticity of functions along with C.R. Conditions
L-26	----- Continued-----
L-27	Harmonic functions and their applications to flow problems.
L-28	Integration of Functions of complex variables.
L-29	Cauchy Integral Theorem and Formula.
L-30	Power Series of Macclaurin's and Laurentz's, Residues.
	CLASS TEST
L-31	Euler's Formulae and Conditions for Fourier Expansion
L-32	Change of Interval and applications
L-33	Fourier Expansion of Even and Odd functions
L-34	-----Continued-----
L-35	Fourier expansion of Square Wave and Rectangular wave Functions.
L-36	Introduction of Fourier Integrals.
L-37	Fourier Transforms
L-38	Properties of Fourier Transforms
L-39	Fourier Transforms of Derivatives and Integrals.
L-40	Convolution Theorem and Derac Delta Function.
	CLASS TEST

Ordinary Differential Equations

Code: MAT 214H

Max. Marks : 100

External Exam: 75

Internal Exam: 25

Time : 3 Hours

Note: The question paper will consist of **four** units. Each unit will contain two questions and the students shall be asked to attempt a total **five**, selecting at **least one** question from each unit.

Unit – I

Geometrical meaning of a differential equation. Exact differential equations, integrating factors. First order higher degree equations solvable for x, y, p Lagrange's equations, Clairaut's equations. Equation reducible to Clairaut's form. Singular solutions.

Unit – II

Orthogonal trajectories: in Cartesian coordinates and polar coordinates. Self orthogonal family of curves.. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations. Equations reducible to homogeneous form.

Unit – III

Linear differential equations of second order: Reduction to normal form. Transformation of the equation by changing the dependent variable/ the independent variable. Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation. Method of variations of parameters. Method of undetermined coefficients.

Unit – IV

Ordinary simultaneous differential equations. Solution of simultaneous differential equations. Simultaneous equation of the form $dx/P = dy/Q = dz/R$. Total differential equations. Condition for $Pdx + Qdy + Rdz = 0$ to be exact. General method of solving $Pdx + Qdy + Rdz = 0$ by taking one variable constant. Method of auxiliary equations.

Books Recommended :

1. E.A. Coddington, Introduction to Differential Equations.
2. S.L.Ross, Differential Equations, John Wiley & Sons
3. B.Rai & D.P. Chaudhary, Ordinary Differential Equations, Narosa Publishing House Pvt. Ltd.
4. Spiegel, Differential Equations, Schaum Outline Series.

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

LESSION PLAN

Name of Faculty : Prof. P. K. Bhatia
Discipline : M.Sc. Mathematics(Dual Degree)
Semester : Second Semester
Subject : Vector Calculus-MAT216H
Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic(including assignments and tests)
L-1	Review of the vectors and theorems on vectors.
L-2	Introduction of scalar and vector triple products, geometrical interpretation of scalar triple product.
L-3	Expansion formula for vector triple product, vector product of four vectors.
L-4	-do-
L-5	Reciprocal system of vectors and their properties.
L-6	Differentiations of vector functions, successive differentiation, differentiation of a function of function.
L-7	-do-
L-8	Some important theorems based on differentiation of vector functions.
L-9	Parametric curve as a trajectory described by a position vector, to compute velocity and acceleration of a moving particle.
L10	-do-
	CLASS TEST
L-11	Introduction of partial derivatives of vector functions. Rules for finding partial derivatives.
L-12	Gradient of a scalar point function. Properties of gradient. Gradient of product and quotients of two scalar point functions.
L-13	-do-
L-14	Level surfaces, geometrical interpretation of $\text{grad } f$. Directional derivatives of a scalar point function.
L-15	-do-
L-16	Results based on directional derivatives of a scalar point function.
L-17	Divergence of a vector function. Properties of divergence.
L-18	Curl of a vector point functions. Properties of curl.
L-19	-do-

L-20	Second order differential function, Laplacian operators, Harmonic function.
	CLASS TEST
L-21	Introduction of curvilinear coordinates, coordinate surfaces and curves. Orthogonal curvilinear coordinates, condition for orthogonality.
L-22	-do-
L-23	Unit vector in orthogonal curvilinear coordinates. Reciprocal system of vector in terms of orthogonal curvilinear coordinates. Relation between unit vectors and grad u, grad v and grad w.
L-24	-do-
L-25	To derive expression for grad u in orthogonal curvilinear cords. Expression for arc length, area element and volume element in orthogonal curvilinear coords.
L-26	To drive expression for gradient, divergence and curl in terms of curvilinear coordinates.
L-27	-do-
L-28	Introduction of cylindrical coords. Expression for square of the element of arch length in cylindrical cords. To prove that cylindrical coord system is orthogonal.
L-29	Introduction of spherical coords. Expression for square of an element of arch length in spherical coords. To prove that spherical coord system is orthogonal.
L-30	-do-
	CLASS TEST
L-31	Introduction of indefinite and definite integrals of vector functions. Some standard results for vector integration.
L-32	Definition of line integral. Formulae for evaluation of line integral.
L-32	-do-
L-33	Definition of surface integral of vector function or flux. Different forms of surface integrals.
L-34	Definition of volume integral formula for evaluation of volume integral.
L-35	-do-
L-36	Statement and proof of Gauss's Divergence theorem.
L-37	-do-
L-38	Statement and proof of Green's theorem. Statement and proof Stoke's theorem.
L-39	-do-
L-40	Green's theorem in plane as special case of Stoke's theorem.

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Mr. Kapil Kumar
Discipline : B.Sc-M.Sc (Dual Degree)
Semester : Second Semester.
Subject : Discrete mathematics _II-MAT218H
Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Lattices Introduction
L-2	Properties of lattices
L-3	Do
L-4	Do
L-5	lattice as algebraic system
L-6	Do
L-7	Do
L-8	Bounded, Complement and distributive lattices.
L-9	Do
L-10	Do
L-11	Boolean Algebra(Introduction with definition and examples)
L-12	Properties
L-13	Do
L-14	Duality
L-15	Distributive and complemented Calculus
L-16	Design and implementation of digital network
L-17	Switching Circuits
L-18	Simplification of Boolean Expressions Using Algebraic methods
L-19	Karnaugh Map
L-20	Do
L-21	Graphs (introduction , Definition and Examples)
L-22	Types of Graphs
L-23	Paths and circuits
L-24	Koingsberg seven bridge problem Eulerian And Hamiltonion paths and circuits
L-25	Do
L-26	Shortest path travelling salesman problems
L-27	Plannar graphs and Euler's formula
L-28	Non-planarity of K_5 and $K_{3,3}$
L-29	Do
L-30	Do

L-31	Directed Graphs
L-32	Trees(Introduction)
L-33	Isomorphism of Trees
L-34	Representation of Algebraic Expressions by Binary Trees
L-35	Spanning Tree of a Graph, Shortest Path Problem
L-36	Do
L-37	Minimal spanning Trees: Prim s and Kruskal s Algorithm
L-38	Do
L-39	Shortest Route Problems: Dijkstra s Algorithm. Cut Sets, Tree Searching
L-40	Do

Lesson Plan

Name of the Faculty : Savita

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : Second Semester.

Subject : Regression analysis and probability-MAT220H

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Regression and probability
L-2	operation of events
L-3	exhaustive equally likely and independent events
L-4	-----do-----
L-5	defination of probability classical relative
L-6	.....do.....
L-7	frerquency statistical
L-8	.....do.....
L-9	.....do.....
L-10	aximatic approach addition and multiplication law of probability
	CLASS TEST
L-11	boole's inequality
L-12	.....do.....
L-13	-----do-----
L-14	baye's theorem
L-15	applications random variable
L-16	-----do-----
L-17	-----do-----
L-18	Probability Function
L-19	-----do-----
L-20	-----do-----
	CLASS TEST
L-21	Linear Regression concept of regression
L-22	principle of least squares and fitting of straight lines
L-23	-----do-----
L-24	-----do-----
L-25	derivation of two lines of regression
L-26	properties of regression coefficients
L-27	standerd error of estimate obtained from

	regression
L-28	.....do.....
L-29	line corelation coffiicient between observed and estimateed values angle
L-30	.....do.....
	CLASS TEST
L-31	difference between correlation and regression
L-32	curvilinear regression
L-33	-----do-----
L-34	concept of bivariate random variable
L-35	.....do.....
L-36	mathematical expectation defination and properties
L-37	.....do.....
L-38	-----do-----
L-39	moments measure of dispersion
L-40	skewness and kurtosis.
	CLASS TEST

Lesson Plan

Name of the Faculty : Prof. R. C. Nautiyal.

Discipline : B.Tech. Chemical Engg.

Semester : Second Semester.

Subject : Mathematics-II.

Lesson Plan duration : 40 Lectures (From January 2018 to April 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Ordinary Differential Equations along with revision.
L-2	Exact Differential Equation.
L-3	EDE continued.
L-4	-----do-----
L-5	Applications of First order Differential Equations.
L-6	Applications continued
L-7	Linear Differential Equations of second and Higher order
L-8	-----Continued-----
L-9	Cauchy's and Legendre's Equations.
L-10	Simultaneous Linear Differential Equations
	CLASS TEST
L-11	Introduction of Transforms and Laplace Transforms.
L-12	Properties of Laplace Transforms.
L-13	-----continued-----
L-14	Laplace Transforms of Derivatives and Integrals.
L-15	-----Continued-----.
L-16	Laplace Transforms of functions multiplied by t^n
L-17	Laplace Transforms of functions divided by t^n
L-18	Laplace Transforms of Unit step and impulse Functions
L-19	Convolution Theorem.
L-20	Application of Laplace Transforms to Linear differential Equations with constant Coefficients.
	CLASS TEST
L-21	Functions of Complex Variable Definitions and introduction
L-22	Exponential, trigonometric, Logarithmic and Hyperbolic functions

L-23	-----Continued-----
L-24	Limits and Continuity of functions
L-25	Differentiability and Analyticity of functions along with C.R. Conditions
L-26	----- Continued-----
L-27	Harmonic functions and their applications to flow problems.
L-28	Integration of Functions of complex variables.
L-29	Cauchy Integral Theorem and Formula.
L-30	Power Series of Macclaurin's and Laurentz's, Residues.
	CLASS TEST
L-31	Euler's Formulae and Conditions for Fourier Expansion
L-32	Change of Interval and applications
L-33	Fourier Expansion of Even and Odd functions
L-34	-----Continued-----
L-35	Fourier expansion of Square Wave and Rectangular wave Functions.
L-36	Introduction of Fourier Integrals.
L-37	Fourier Transforms
L-38	Properties of Fourier Transforms
L-39	Fourier Transforms of Derivatives and Integrals.
L-40	Convolution Theorem and Derac Delta Function.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

LECTURE PLAN

Name of Faculty:	Ms. Mansi Lather
Discipline:	M.Sc. Mathematics(Dual Degree)
Semester	2 nd
Subject:	Visual Basic-MAT222H
Lecture Plan Duration:	40 Lectures(From January 8, 2018 to April 27, 2018).

Lectures Topic(including assignment and test)

L-1	Introduction to Visual Basic and analysing toolbox
L-2	Controls and Properties
L-3,4,5	Coding
L-6,7,8	Control Structures: Decisions and loops
L-9	Control Array
L-10	Arrays
L-11	CLASS TEST
L-12	Text Boxes
L-13	Command Buttons
L-14	List Box
L-15	Option Buttons
L-16	Frames
L-17	Check Boxes
L-18	Scroll bars
L-19	Timer Control

L-20	CLASS TEST
L-21,22	Menu Editor
L-23	Menu Controls
L-24	Dialog Boxes
L-25,26,27	Procedures and Functions
L-28	Using debugging window
L-29,30,31	Database Programming
L-32	CLASS TEST
L-33	Crystal Reports
L-34,35	Simple Active X controls
L-36,37,38,39	Library Functions: String, numeric, time related and miscellaneous functions
L-40	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Bhagwan Dass

Discipline : M.Sc. Mathematics(Dual Degree).

Semester : Fourth Semester.

Subject : Sequence and Series –MAT312H

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Topology of real number
L-2	Boundedness of the set of real number: lub, glb
L-3	Neighbourhood, interior point, isolated point
L-4	Limit point, open set, closed point.
L-5	Interior and closure of a set of real number and their properties.
L-6	-----do-----
L-7	Bolzeno Weiestrass theorem
L-8	Open cover
L-9	Compact sets and Heine-Borel theorem
L-10	-----do-----
	CLASS TEST
L-11	Real sequences and their convergence
L-12	Theorem on convergence of real sequence
L-13	-----do-----
L-14	Bounded and monotonic sequence, Cauchy's sequence
L-15	Cauchy general principle of convergence
L-16	Subsequences and subsequential limits
L-17	Convergence nad divergence of Infinite series
L-18	Comparison test for infinite series
L-19	Cauchy general principle of series
L-20	Convergence and divergence of G.P series and p-series
	CLASS TEST
L-21	D-Alembert's ratio test
L-22	Raabe's test,logarithmic test
L-23	-----do-----
L-24	De Morgan and Bertrand's test
L-25	Cauchy's nth root test
L-26	Gauss test, Cauchy's integral test
L-27	Cauchy's condensation test
	CLASS TEST

L-28	Alternating series, Leibnitz's test
L-29	Absolute and conditional test
L-30	Arbitrary series: Abel's lemma, Abel's test
L-31	Dirichlet's test
L-32	Rearrangement of term in a series
L-33	-----do-----
L-34	Dirichlet's theorem
L-35	Riemann's Re-arrangement theorem
L-36	Pringsheim's theorem, Multiplication of series
L-37	Cauchy product of series (definitions and example only)
L-38	-----do-----
L-39	Convergence of infinite products
L-40	Absolute convergence of infinite product.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. V.P.Tomar

Discipline : M.Sc. Mathematics (Dual Degree)

Semester : 4th Semester.

Subject : **Special Functions and Integral Transforms-MAT314H**

Lesson Plan duration : 40 Lectures (From January 2018 to April 2018).

Lectures	Topic (including assignment and test)
L-1	Series solution of differential equations
L-2	-----do-----
L-3	Power series method
L-4	Definitions of Beta and Gamma functions
L-5	Bessel equation and its solution
L-6	-----do-----
L-7	Bessel functions and their properties- Convergence, recurrence
L-8	Relations and generating functions
L-9	-----do-----
L-10	Orthogonality of Bessel functions
	CLASS TEST
L-11	Legendre and Hermite differentials equations and their solutions
L-12	-----do-----
L-13	Legendre and Hermite functions and their properties
L-14	Recurrence Relations and generating functions
L-15	-----do-----
L-16	Orthogonality of Legendre and Hermite polynomials
L-17	Rodrigues Formula for Legendre & Hermite Polynomials
L-18	-----do-----
L-19	Laplace Integral Representation of Legendre polynomial
L-20	-----do-----
	CLASS TEST
L-21	Laplace Transforms Existence theorem for Laplace transforms
L-22	-----do-----

L-23	Linearity of the Laplace Transforms
L-24	Shifting theorems
L-25	Laplace transforms of derivatives and integrals
L-26	-----do-----
L-27	Differentiation and integration of Laplace transforms
L-28	Convolution theorem
L-29	Inverse Laplace transforms, convolution theorem
L-30	Inverse Laplace transforms of derivatives and Integrals
L-31	solution of ordinary differential equations using Laplace transform.
	CLASS TEST
L-32	Fourier transforms
L-33	Linearity property, Shifting, Modulation
L-34	-----do-----
L-35	Convolution Theorem
L-36	Fourier Transform of Derivatives
L-37	Relations between Fourier transform and Laplace transform
L-38	Parseval s identity for Fourier transforms
L-39	-----do-----
L-40	Solution of differential Equations using Fourier Transforms

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. V.P.Tomar and Dr. Krishan Kumar

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : 4th Semester.

Subject : Probability Distribution & Numerical Methods-MAT316H

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction to Probability and statistics
L-2	Moment generating function, drawbacks and Properties
L-3	MGF ontinued.
L-4	-----do-----
L-5	Cumulants, derivation and its properties
L-6	CUmulants continued
L-7	-----do-----
L-8	Bernouli's distribution .
L-9	Binomial distribution, its Properties and uses.
L-10	-----Do-----
	CLASS TEST
L-11	Poisson's distribution, its properties and uses.
L-12	-----do-----
L-13	-----do-----
L-14	Normal Distribution, its properties and uses.
L-15	-----Do-----
L-16	-----do-----
L-17	-----do-----
L-18	Central Limit theorem and its application
L-19	-----Do-----
L-20	-----Do-----
	CLASS TEST
L-21	Solution of Algebraic and Transcendental equations
L-22	Bisection method
L-23	Regula-Falsi method
L-24	Secant method
L-25	Newton-Raphson s method
L-26	Newton s iterative method for finding pth root of a number

L-27	-----do-----
L-28	-----do-----
L-29	Order of convergence of above methods.
	CLASS TEST
L-30	Simultaneous linear algebraic equations
L-31	Gauss-elimination method
L-32	Gauss-Jordan method
L-33	Triangularization method (LU decomposition method)
L-34	Crout s method
L-35	Cholesky Decomposition method
L-36	Iterative method
L-37	Jacobi s method
L-38	Gauss-Seidal s method, Relaxation method
L-39	Uniform, gamma
L-40	Beta (first and second kinds) and Exponential distributions with their properties.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Sandeep

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : Fourth Semester.

Subject : Hydrostatic-MAT318H.

Lesson Plan duration : 30 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Hydrostatic.
L-2	Important definition related to matter
L-3	Types of matter
L-4	Fluid thrust and surface Force
L-5	Theorem related to pressure
L-6	Pressure Equation
L-7	Condition of equilibrium
L-8	Line of force
L-9	Homogeneous and heterogeneous fluid
L-10	Elastic fluids
L-11	Surface of equal Pressure
L-12	Fluid at rest under action of gravity
L-13	Rotating fluid
L-14	Fluid pressure on a plane surface
L-15	-----do-----
L-16	Theorem related to centre of pressure
L-17	-----do-----
L-18	Resultant pressure on curved surfaces.
L-19	Equilibrium of floating bodies
L-20	Curve and surface of buoyancy
L-21	Stability of equilibrium of floating bodies.
L-22	-----do-----
L-23	Metacenter
L-24	-----do-----
L-25	Work done in producing a displacement
L-26	-----do-----
L-27	Vessels containing liquid.
L-28	-----do-----
L-29	Gas law and related theorem.
L-30	-----do-----

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Parveen Kumar.

Discipline : M.Sc (Dual degree).

Semester : Four Semester.

Subject : Elementry Inference-MAT320H .

Lesson Plan duration : 41 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Statistics
L-2	-----do-----
L-3	-----do-----
L-4	-----do-----
L-5	-----do-----
L-6	Parameter and Statistic
L-7	-----do-----
L-8	Sampling
L-9	-----do-----
L-10	Sampling distribution
L-11	-----do-----
L-12	-----do-----
L-13	-----do-----
L-14	Standard error
L-15	-----do-----
L-16	-----do-----
L-17	Point and interval estimation
L-18	-----do-----
L-19	Unbiasedness, Efficiency, Consistency, and Sufficiency
L-20	-----do-----
L-21	-----do-----
	Test
L-22	Method of maximum likelihood estimation
L-23	-----do-----
L-24	Null and alternative hypothesis
L-25	-----do-----
L-26	Simple and composite hypothesis
L-27	Critical region
L-28	Level of significance
L-29	One tailed and two tailed test, types of error

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : **Sweety Tushir**

Discipline : **5-Year Integrated M.Sc. in Mathematics (Dual Degree).**

Semester : **4th Semester.**

Subject : **Data Structures Using C Code: MAT 322H**

Lesson Plan duration : **40 Lectures (From January 8, 2018 to April 27, 2018).**

Lectures	Topic (including assignment and test)
L-1	Data structure and its essence, Data structure types
L-2	Linear and list structures: Arrays
L-3	Stacks
L-4	Queues
L-5	Lists; Sequential and linked structures
L-6	Simple lists, circular lists
L-7	Doubly linked lists. Inverted lists
L-8	Trees. Implementing binary trees
L-9	Tree traversal algorithms, threaded trees
L-10	Trees threaded list
L-11	Arrays, Multidimensional arrays, sequential allocation
L-12	Address calculations
L-13	Sparse arrays
L-14	Tree structures: Trees
L-15	Binary trees and binary search in search algorithms
L-16	AVL Trees
L-17	Operations on all these structures and applications quiz
L-18	Sequential allocation quiz
L-19	TEST
L-20	Graph data structure and their applications.
L-21	Family of B-Trees: B-tree
L-22	B*-Trees
L-23	B+ Trees
L-24	Graph traversals
L-25	Shortest paths
L-26	Spanning trees

L-27	Spanning trees PROBLEMS
L-28	Related algorithms
L-29	Sorting: Internal and External sorting
L-30	Various sorting algorithms
	Time and Space complexity of algorithms
L-31	Searching techniques
L-32	Merging algorithms
L-33	TEST
L-34	Applications of sorting and
L-35	Searching in computer science
L-36	Sorting
L-37	Bubble sort
L-38	Selection sort
L-39	Revision
L-40	CLASS TEST

Lesson Plan

Name of the Faculty : Prof. R. C. Nautiyal.
 Discipline : B.Tech. Chemical Engg.
 Semester : Second Semester.
 Subject : Mathematics-II.
 Lesson Plan duration : 40 Lectures (From January 2018 to April 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Ordinary Differential Equations along with revision.
L-2	Exact Differential Equation.
L-3	EDE continued.
L-4	-----do-----
L-5	Applications of First order Differential Equations.
L-6	Applications continued
L-7	Linear Differential Equations of second and Higher order
L-8	-----Continued-----
L-9	Cauchy's and Legendre's Equations.
L-10	Simultaneous Linear Differential Equations
	CLASS TEST
L-11	Introduction of Transforms and Laplace Transforms.
L-12	Properties of Laplace Transforms.
L-13	-----continued-----
L-14	Laplace Transforms of Derivatives and Integrals.
L-15	-----Continued-----.
L-16	Laplace Transforms of functions multiplied by t^n
L-17	Laplace Transforms of functions divided by t^n
L-18	Laplace Transforms of Unit step and impulse Functions
L-19	Convolution Theorem.
L-20	Application of Laplace Transforms to Linear differential Equations with constant Coefficients.
	CLASS TEST
L-21	Functions of Complex Variable Definitions and introduction
L-22	Exponential, trigonometric, Logarithmic and Hyperbolic functions
L-23	-----Continued-----
L-24	Limits and Continuity of functions
L-25	Differentiability and Analyticity of functions

	along with C.R. Conditions
L-26	----- Continued-----
L-27	Harmonic functions and their applications to flow problems.
L-28	Integration of Functions of complex variables.
L-29	Cauchy Integral Theorem and Formula.
L-30	Power Series of Macclaurin's and Laurentz's, Residues.
	CLASS TEST
L-31	Euler's Formulae and Conditions for Fourier Expansion
L-32	Change of Interval and applications
L-33	Fourier Expansion of Even and Odd functions
L-34	-----Continued-----
L-35	Fourier expansion of Square Wave and Rectangular wave Functions.
L-36	Introduction of Fourier Integrals.
L-37	Fourier Transforms
L-38	Properties of Fourier Transforms
L-39	Fourier Transforms of Derivatives and Integrals.
L-40	Convolution Theorem and Derac Delta Function.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Sandeep.

Discipline : M. Sc. (Dual degree).

Semester : Sixth Semester.

Subject : Real and Complex analysis-MAT412H

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Functions of complex variables.
L-2	-----do-----
L-3	-----do-----.
L-4	Trigonometric function and their periodicity
L-5	-----do-----
L-6	Fourier series expansion
L-7	Existence condition
L-8	-----do-----
L-9	FSE of monotonic piecewise function
L-10	-----do-----
L-11	FSE of odd and even function
L-12	-----do-----
L-13	Dirichlet's condition and examples
L-14	-----do-----
L-15	Half range sine and cosine series
L-16	-----do-----
L-17	Parsvel's identity
L-18	Change of interval
L-19	-----do-----
L-20	-----do-----
L-21	Extended complex plane
L-22	Stereographic projection
L-23	Continuity and differentiability of function
L-24	C-R equations
L-25	Analytic function
L-26	Harmonic function
L-27	Cauchy integral
L-28	Power series and ROC
L-29	Taylor and Laurent series

L-30	Singularity and residue
L-31	Mapping by elementary function
L-32	Translation rotation
L-33	Magnification and inversion
L-34	Conformal mapping
L-35	Mobius transformation
L-36	-----do-----
L-37	Fixed point
L-38	Cross ratio
L-39	Critical mappings
L-40	-----do-----

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculties : Prof. Sudhir K. Garg and Dr. Manjit Singh

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : 6th Semester.

Subject : Linear Algebra (MAT-414H).

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction to vector spaces, examples
L-2	Subspaces and their examples, intersection and sum of two subspaces
L-3	Some results based on subspaces containing disjoint subspaces
L-4	Linearly dependent and independent subsets of a vector space
L-5	Study of independent/dependent vectors via Matrix echelon form and their rank.
L-6	Linear span, a subspace generated by a subset, finitely generated subspaces.
L-7	Basis of a vector space, maximum linearly independent set, minimal generating set of a vector space
L-8	Dimension of a subspace and invariant property of dimension of a subspace
L-9	Dimension of direct sum of two or more subspaces.
L-10	Quotient space and its dimension.
	CLASS TEST
L-11	Linear Transformation on vectors spaces. Isomorphism on vector spaces.
L-12	Determination of Linear transformation and its associated matrix
L-13	Dual spaces and Bidual spaces, Annihilators.
L-14	Null space $N(T)$ and range space $R(T)$ of a linear transformation
L-15	Fundamental Theorem of Vector space Homomorphism
L-16	Image of linearly independent vectors under a linear transformation.
L-17	Linear transformation, basis of range space and Null space
L-18	Rank and Nullity of a linear transformation.
L-19	Sylvester's law

L-20	Some examples on linear transformation for determining the rank and the nullity.
	CLASS TEST
L-21	The space of all linear transformations $\text{Hom}(U,V)$
L-22	Sum and composition of two linear transformations and their rank
L-23	Minimal polynomial of a linear transformation
L-24	Singular and non-singular transformations
L-25	Invertible operators and its properties
L-26	Matrices of linear transformations of $T+S$, TS and kT .
L-27	Matrix of a L.T. with respect to Standard basis, Matrix representation of a L.T. with respect to ordered basis, that is, the matrix $[T:B:B']$
L-28	Change of Basis, Basis of Dual space V^* and Bidual vector space V^{**}
L-29	Eigen values and eigen vectors, characteristic polynomials of a L.T.
L-30	Similar matrices and Diagonalizable matrix using eigen values
	CLASS TEST
L-31	Introduction an inner product on a vector space, inner product space and its examples
L-32	Norm of a vector, Cauchy-Schwartz inequality and its consequences
L-33	Normed linear space and some examples
L-34	Orthogonal vectors and orthogonal complement of a subset of an inner product space.
L-35	Orthonormal sets and Orthonormal basis
L-36	Bessel's Inequality for finite dimensional vector spaces
L-37	Gram-Schmidt orthogonalization process
L-38	Orthogonal projections
L-39	Linear operators, adjoint operator, self-adjoint operators, normal operators
L-40	Unitary, Hermition operators, eigen values of self-adjoint operator, orthonormal basis and unitary operator.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Yogita Godara
Discipline : M.Sc. Mathematics (Dual Degree).
Semester : 6th Semester.
Subject : Dynamics (MAT-416 H).
Lesson Plan duration : 53 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Some basic definitions
L-2	Velocity and acceleration along radial and transverse directions
L-3	-----do-----
L-4	-----do-----
L-5	Velocity and acceleration along tangential and normal directions
L-6	-----do-----
L-7	-----do-----
L-8	Relative velocity and acceleration
L-9	-----do-----
L-10	-----do-----
L-11	Simple Harmonic Motion
L-12	-----do-----
L-13	-----do-----
L-14	Elastic string
L-15	-----do-----
L-16	-----do-----
	Class test
L-17	Mass, Moments and Forces
L-18	-----do-----
L-19	-----do-----
L-20	Newton's Laws of Motion
L-21	-----do-----
L-22	-----do-----
L-23	Work
L-24	-----do-----
L-25	Power
L-26	-----do-----
L-27	Energy
L-28	-----do-----
	Class test
L-29	Motion on smooth Curves

L-30	-----do-----
L-31	-----do-----
L-32	Motion on a plane curve
L-33	-----do-----
L-34	-----do-----
L-35	Projectile motion of a particle in a plane
L-36	-----do-----
L-37	-----do-----
L-38	-----do-----
L-39	Vector angular velocity
	Class test
L-40	General Motion of a rigid body
L-41	-----do-----
L-42	Central orbits
L-43	-----do-----
L-44	-----do-----
L-45	Kepler's Laws of Motion
L-46	-----do-----
L-47	-----do-----
L-48	Motion of a particle in 3-D
L-49	-----do-----
L-50	-----do-----
L-51	Acceleration in terms of different co-ordinate system
L-52	-----do-----
L-53	-----do-----
	Class test

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan(Elementary topology)

Name of the Faculty : Dr.Sanjay Kumar
Discipline : M.Sc. Mathematics (Dual degree).
Semester : Sixth Semester.
Subject : Elementary topology (MAT 418H).
No. of Lesson Plans : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Recall meaning of axioms and discuss some axioms, discuss continuum hypothesis. Describe meaning of topology and relation with geometrical figures. Discuss Topology of alphabet of English . Give list of some books and let them to know lecture available on NPTEL
L-2	Definitions and examples of Topological spaces and discuss some special types of topologies.
L-3	Continue discussion some special types of topologies and familiar with finer and weaker topology, intersection and union of topologies.
L-4	Discuss Characterization of topology in terms of closed sets.
L-5	Recall neighborhood, Discuss Characterization of topology in terms of neighborhoods.
L-6	Recall interior points, Discuss Characterization of topology in terms of interior points.
L-7	Recall exterior points, Discuss Characterization of topology in terms of Exterior points.
L-8	Recall boundary points and its relation with exterior and interior points.
L-9	Continued boundary points and its relation with exterior and interior points.
L-10	Meaning of base, Discuss various types of bases.
L-11	Continue discussion on bases and their results.
L-12	Characterization of topological spaces in terms of base and collection of

	subsets , topology generated by a collection of sets.
L-13	Continued discussion on Characterization of topological spaces in terms of base and collection of subsets , topology generated by a collection of sets.
L-14	A brief discussion on limit point(Accumulation points) , derived sets, properties of derived sets.
L-15	Meaning of closed set, closure of a set, Dense sets and their properties.
L-16	A discussion on alternate methods of defining a topology in terms of Kuratowski Closure Operator.
L-17	A brief discussion on continuity and how continuity occurs in topology , Continuous functions and homeomorphism
L-18	Continued discussion on continuity and how continuity occurs in topology , Continuous functions and homeomorphism.
L-19	Continued discussion on continuity and how continuity occurs in topology , Continuous functions and homeomorphism.
L-20	Continued discussion on continuity and how continuity occurs in topology , Continuous functions and homeomorphism.
	Class test
L-21	Meaning of connectedness, characterizations of connectedness.
L-22	A discussion on Continuity and connectedness.
L-23	A discussion on Continuity and connectedness.
L-24	A discussion on Continuity and connectedness.
L-25	Discussion on maximal connected set and locally connected spaces.
L-26	Discussion on maximal connected set and locally connected spaces.
L-27	Recall meaning of compactness on real line, metric spaces, compactness in topology , Basic properties of compactness .
L-28	Compactness and continuity.

L-29	Compactness and finite intersection property, Bolzano Weierstrass property.
L-30	A discussion on various types of compactness.
CLASS TEST	
L-31	Continued discussion on various types of compactness
L-32	Continued discussion on various types of compactness
L-33	Continued discussion on various types of compactness
L-34	Application of compactness such as Lindelof's spaces and one point compactification theorem.
L-35	Continue discussion on Application of compactness such as Lindelof's spaces and one point compactification theorem.
L-36	Meaning of countable, a discussion on first and second Countable spaces and their characteristic properties.
L-37	Continue discussion on first and second Countable spaces. Characteristic properties of first and second countable spaces.
L-38	Separable spaces and their characteristics.
L-39	Separation axioms: T_0 , T_1 and T_2 spaces and their characteristic properties.
L-40	Continued Separation axioms: T_0 , T_1 and T_2 spaces and their characteristic properties.
CLASS TEST	

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Bipasha Pal

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : Sixth semester

Subject : Elementary topology-MAT418H.

Lesson Plan duration : 28 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Compact spaces and subsets
L-2	Compactness in terms of finite intersection property, Continuity and compact sets
L-3	----do----
L-4	Basic properties of compactness, Closedness of Compact subset
L-5	----do----
L-6	continuous map from a compact space into a Hausdorff and its consequences
L-7	-----do-----
L-8	Sequentially and countably compact sets
L-9	Local compactness
L-10	One point compactification
L-11	-----do-----
L-12	First countable, second countable
L-13	separable spaces
L-14	hereditary and topological property
L-15	-----do-----
L-16	Countability of a collection of disjoint open sets in separable spaces
L-17	-----do-----
L-18	Countability of a collection of disjoint open sets in second countable spaces
L-19	Lindelof theorem
L-20	----do----
L-21	T0 separation axiom, characterization and basic properties.
L-22	----do----
L-23	T1 separation axiom, characterization and basic properties.
L-24	-----do-----

L-25	T2 separation axiom, characterization and basic properties.
L-26	----do----
L-27	Revision
L-28	-----do-----

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Yogita Godara

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : 6th Semester.

Subject : Fluid Dynamics (MAT-420 H).

Lesson Plan duration : 45 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction to fluid concept and some basic definitions
L-2	Eulerian and Lagrangian Method
L-3	Stream, Path and streak Lines
L-4	-----do-----
L-5	Velocity Potential
L-6	Irrotational and rotational Motion
L-7	Vortex Lines
L-8	Equation of continuity
L-9	Boundary Surfaces
L-10	Numericals on above concepts
L-11	-----do-----
L-12	-----do-----
	Class test
L-13	Acceleration at a point of a fluid
L-14	Components of acceleration in cylindrical and spherical co-ordinates
L-15	-----do-----
L-16	Pressure at point of a moving fluid
L-17	Euler and Lagrangian equation of motion
L-18	Numericals on above concept
L-19	Bernauli's equation
L-20	Numericals on Bernauli's equation
L-21	Impulsive Motion
L-22	Stream function
L-23	Numericals on above concepts
	Class test
L-24	Acyclic and cyclic Irrotational motion
L-25	K.E. of Irrotational flow
L-26	Kelvin's Minimum energy Theorem
L-27	Axially Symmetric Flow
L-28	Liquid streaming past a fixed sphere

L-29	Motion of a sphere through a liquid at rest at infinity
L-30	Equation of motion of Sphere
L-31	3-D Source, Sink and Doublets and their images
L-32	-----do-----
L-33	-----do-----
L-34	Stoke's Stream function
L-35	Numericals on above concepts
L-36	-----do-----
	Class test
L-37	Irrotational motion in 2-D
L-38	Complex Velocity Potential
L-39	Milne Thomson Circle Theorem
L-40	2-D Source, Sink and Doublets and their images
L-41	-----do-----
L-42	Blasius Theorem
L-43	2-D irrotational motion produced by motion of circular and co-axial cylinders in an infinite mass of fluid
L-44	-----do-----
L-45	Numericals on above concepts
	Class test

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Nawneet Hooda

Discipline : M.Sc. Mathematics(Dual Degree).

Semester : Eight Semester.

Subject : Measure and Integration Theory-MAT512H

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Set functions
L-2	Elementary properties of measure
L-3	Properties continued.
L-4	Lebesgue measure of a set of real numbers
L-5	Algebra of measurable sets
L-6	Borel sets
L-7	.....do.....
L-8	.....do.....
L-9	Open and closed sets
L-10	Non measurable sets
	CLASS TEST
L-11	Measurable functions and their equivalent formulations
L-12	Properties of measurable functions
L-13	-----do-----
L-14	Approximation of a measurable function
L-15	Egoroff's theorem
L-16	Lusin's theorem
L-17	Convergence in measure
L-18	.....do.....
L-19	F . Riesz theorem
L-20	Almost uniform convergence
	CLASS TEST
L-21	Shortcoming of Riemann Integral
L-22	Generalization of Riemann Integral
L-23	-----do-----
L-24	-----do-----
L-25	Fatou's Lemma
L-26	Monotone convergence theorem
L-27	General Lebesgue Integral
L-28	.....do.....
L-29	Lebesgue convergence theorem
L-30	.....do.....
	CLASS TEST
L-31	Riemann-Stieltjes integral
L-32	existence and properties
L-33	-----do-----

L-34	Integration and differentiation
L-35	.....do.....
L-36	The fundamental theorem of calculus
L-37	.....do.....
L-38	-----do-----
L-39	Integration of vector -valued functions
L-40	.....do.....
	CLASS TEST

Lesson Plan

Name of the Faculty : Dr. Nawneet Hooda

Discipline : M.Sc. Mathematics(2 years).

Semester : Second Semester.

Subject : **MEASURE AND INTEGRATION THEORY**

Lesson Plan duration : 40 Lectures (From January 2018 to April 2018).

Lectures	Topic (including assignment and test)
L-1	Measurable functions and their equivalent formulations
L-2	Properties of measurable functions
L-3	Approximation of measurable functions by sequences of simple functions,
L-4	-----do-----
L-5	Measurable functions as nearly continuous functions
L-6	Egoroffs theorem
L-7	Lusin's theorem,
L-8	-----Continued-----
L-9	Convergence in measure
L-10	Almost uniform convergence.
	CLASS TEST
L-11	Shortcomings of Riemann Integral.
L-12	Lebesgue Integral of a bounded function over a set of finite measure and its properties,
L-13	-----continued-----
L-14	Lebesgue integral as a generalization of Riemann integral
L-15	-----Continued-----.
L-16	Bounded convergence theorem,
L-17	.....continued.....
L-18	.....continued.....
L-19	Lebesgue theorem regarding points of discontinuities of Riemann integrable functions,
L-20	.....continued.....
	CLASS TEST
L-21	Integral of non-negative functions,
L-22	Fatou's Lemma,
L-23	-----Continued-----
L-24	Monotone convergence theorem,
L-25	General Lebesgue Integral,
L-26	----- Continued-----
L-27	Lebesgue convergences theorem.
L-28	Vitali's covering Lemma,
L-29	----- Continued-----
L-30	Differentiation of monotonic functions,
	CLASS TEST
L-31	Functions of bounded variation
L-32	representation as difference of monotonic functions.
L-33	-----Continued-----
L-34	-----Continued-----
L-35	Differentiation of indefinite integral.
L-36	Fundamental Theorem of Calculus.

L-37	-----Continued-----
L-38	Absolutely continuous functions and their properties.
L-39	-----Continued-----
L-40	-----Continued-----
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Nawneet Hooda

Discipline : M.Sc. Mathematics(Dual Degree).

Semester : Eight Semester.

Subject : Measure and Integration Theory-MAT512H.

Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of Set functions
L-2	Elementary properties of measure
L-3	Properties continued.
L-4	Lebesgue measure of a set of real numbers
L-5	Algebra of measurable sets
L-6	Borel sets
L-7	.....do.....
L-8	.....do.....
L-9	Open and closed sets
L-10	Non measurable sets
	CLASS TEST
L-11	Measurable functions and their equivalent formulations
L-12	Properties of measurable functions
L-13	-----do-----
L-14	Approximation of a measurable function
L-15	Egoroff's theorem
L-16	Lusin's theorem
L-17	Convergence in measure
L-18	.....do.....
L-19	F . Riesz theorem
L-20	Almost uniform convergence
	CLASS TEST
L-21	Shortcoming of Riemann Integral
L-22	Generalization of Riemann Integral
L-23	-----do-----
L-24	-----do-----
L-25	Fatou's Lemma
L-26	Monotone convergence theorem
L-27	General Lebesgue Integral
L-28	.....do.....
L-29	Lebesgue convergence theorem
L-30	.....do.....
	CLASS TEST
L-31	Riemann-Stieltjes integral
L-32	existence and properties
L-33	-----do-----

L-34	Integration and differentiation
L-35	.....do.....
L-36	The fundamental theorem of calculus
L-37	.....do.....
L-38	-----do-----
L-39	Integration of vector -valued functions
L-40	.....do.....
	CLASS TEST

Lesson Plan

Name of the Faculty : Dr. Nawneet Hooda

Discipline : M.Sc. Mathematics(2 years).

Semester : Second Semester.

Subject : **MEASURE AND INTEGRATION THEORY**

Lesson Plan duration : 40 Lectures (From January 2018 to April 2018).

Lectures	Topic (including assignment and test)
L-1	Measurable functions and their equivalent formulations
L-2	Properties of measurable functions
L-3	Approximation of measurable functions by sequences of simple functions,
L-4	-----do-----
L-5	Measurable functions as nearly continuous functions
L-6	Egoroffs theorem
L-7	Lusin's theorem,
L-8	-----Continued-----
L-9	Convergence in measure
L-10	Almost uniform convergence.
	CLASS TEST
L-11	Shortcomings of Riemann Integral.
L-12	Lebesgue Integral of a bounded function over a set of finite measure and its properties,
L-13	-----continued-----
L-14	Lebesgue integral as a generalization of Riemann integral
L-15	-----Continued-----.
L-16	Bounded convergence theorem,
L-17	.....continued.....
L-18	.....continued.....
L-19	Lebesgue theorem regarding points of discontinuities of Riemann integrable functions,
L-20	.....continued.....
	CLASS TEST
L-21	Integral of non-negative functions,
L-22	Fatou's Lemma,
L-23	-----Continued-----
L-24	Monotone convergence theorem,
L-25	General Lebesgue Integral,
L-26	----- Continued-----
L-27	Lebesgue convergences theorem.
L-28	Vitali's covering Lemma,
L-29	----- Continued-----
L-30	Differentiation of monotonic functions,
	CLASS TEST
L-31	Functions of bounded variation
L-32	representation as difference of monotonic functions.
L-33	-----Continued-----
L-34	-----Continued-----
L-35	Differentiation of indefinite integral.
L-36	Fundamental Theorem of Calculus.

L-37	-----Continued-----
L-38	Absolutely continuous functions and their properties.
L-39	-----Continued-----
L-40	-----Continued-----
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Manjit Singh
Discipline : M.Sc. Mathematics (Dual Degree).
Semester : 8th Semester.
Subject : Rings and Modules (MAT-514H).
Lesson Plan duration : 48 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction to a left-R module, examples
L-2	Submodules, sum of two submodules
L-3	Submodule generated by a subset of a module
L-4	Cyclic module and its examples
L-5	Quotient module, R-homomorphisms, R-isomorphisms of modules.
L-6	Ring of all endomorphisms on a left R-module M, that is $\text{End}_R(M)$.
L-7	Simple or irreducible and semi-simple modules
L-8	Schur's Lemma
L-9	Free modules, linearly independent elements, rank of a module
L-10	Finitely generated free modules
L-11	Fundamental structure theorem of finitely generated modules over PID
L-12	Applications to finitely generated Abelian groups
	CLASS TEST
L-13	Introduction to ascending and descending chain of submodules of an R-module.
L-14	Noetherian and Artinian modules and their examples
L-15	Equivalence properties of Noetherian module
L-16	Equivalence properties of Artinian module
L-17	Submodule and Quotient module of a Noetherian module
L-18	Submodule and Quotient module of a Artinian module
L-19	Homomorphic image of Noetherian and Artinian modules
L-20	Direct product and direct sum of Artinian modules
L-21	Noetherian and Artinian rings

L-22	Maximal chain conditions for right ideals of Noetherian rings
L-23	Minimal chain conditions for right ideals of Artinian rings
L-24	Hilbert basis Theorem concerning Noetherian rings with unity.
	CLASS TEST
L-25	The ring of all endomorphisms of a ring with unity, that is, $\text{Hom}(R,R)$
L-26	Opposite rings
L-27	Idempotents elements in a ring and some results concerning generation of ideals by these idempotents
L-28	Wedderburn-Artin Theorem
L-29	Introduction of Group Algebra or Group Ring
L-30	Maschke's Theorem concerning semi-simple Artinian rings
L-31	Equivalent statement for left Artinian rings having non-zero nilpotent ideals
L-32	Uniform modules and Primary modules
L-33	Annihilator of an element, prime ideal P and P -primary module
L-34	Uniform module over a commutative Noetherian ring
L-35	Finitely generated modules over a commutative Noetherian ring
L-36	Noether-Lasker Theorem
	CLASS TEST
L-37	Linear transformation, Quotient spaces, Algebra of linear transformations $A(V)$.
L-38	Regular transformation, invariant subspace under a linear transformation
L-39	Similarity of linear transformations
L-40	Reduction to triangular form
L-41	Nilpotent transformations and index of nilpotency, sum and product of two nilpotent transformations.
L-42	Invariants of nilpotent transformations
L-43	Examples on invariant subspaces and nilpotent transformations
L-44	Similarity of two nilpotent linear transformations
L-45	The primary decomposition Theorem
L-46	Jordan canonical forms, the minimal polynomial and characteristic polynomial for a linear operator.
L-47	Jordan block corresponding to characteristic

	root, Examples of nilpotent transformations and Jordan canonical forms
L-48	Determination of Jordan canonical forms for a linear transformation whose characteristic polynomial is given.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Bipasha Pal
 Discipline : M.Sc. Maths (Dual Degree)
 Semester : Eighth Semester.
 Subject : General topology-MAT516H
 Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Revision of T_0 , T_1 , T_2 spaces.
L-2	T_3 , T_4 spaces and their characterization
L-3	Urysohn lemma, tieze extension theorem
L-4	Properties of compact housdorff spaces
L-5	----do----
L-6	Quotient topology
L-7	Housdorffness of quotient space
L-8	Product topological spaces, projection mapping
L-9	Tychonoff product topology and characterization
L-10	----do----
L-11	Separation axioms and product spaces
L-12	Connectedness, local connectedness
L-13	Compactness of product spaces
L-14	Tychonoff product theorem.
L-15	Embedding and metrization.
L-16	-----do-----
L-17	Metriizable space, urysohn metrization theorem
L-18	----do----
L-19	Nets, convergence of net
L-20	Housdorffness and nets
L-21	Subnets and cluster points
L-22	Introduction to filters
L-23	Finer filters and methods of generation
L-24	Ultra filter and characterization
L-25	Ultra filter principle
L-26	Continuity in terms of convergence of filters
L-27	Housdorffness, compactness and filter convergence
L-28	Converting net into filters and vice versa
L-29	Stone-cech compactification
L-30	----do----

L-31	Covering of space, local finiteness
L-32	Para compact spaces
L-33	Michael theorem
L-34	----do----
L-35	Para compactness as normal space
L-36	A H stone theorem
L-37	-----do-----
L-38	Nahaya Smirnof theorem
L-39	-----do-----
L-40	Revision

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Sandeep

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : Eighth Semester.

Subject : Complex Analysis-MAT518H

Lesson Plan duration : 28 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of complex plane
L-2	Justification for complex number
L-3	Extended complex plane and stereographic projection
L-4	Complex polynomial and their zero
L-5	Rational functions and their poles
L-6	Uniform convergence of sequence and series
L-7	-----do-----
L-8	Weiestrass M-test
L-9	Power Series and Abel's theorem
L-10	-----do-----
L-11	Hadamard's formula
L-12	Abel's limit theorem and periodicity
L-13	Elementry point topology
L-14	Connectedness and compactness
L-15	-----do-----
L-16	Continuity and diffrentiability of functions
L-17	-----do-----
L-18	Closed curves and arcs
L-19	Jorden curve
L-20	Analytic functions in regions
L-21	Conformal mapping
L-22	Oriented circles
L-23	Elementry Riemann surface
L-24	-----do-----
L-25	Use of level curves
L-26	Morera theorem
L-27	Liouville's theorem
L-28	-----do-----

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Parveen Kumar

Discipline : M.Sc. Mathematics(Dual Degree).

Semester : Eighth Semester.

Subject : Complex Analysis-MAT518H.

Lesson Plan duration : 24 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Complex Integration.
L-2	Line Integrals.
L-3	Rectifiable Arcs.
L-4	Cauchy's Theorem for Rectangle.
L-5	Cauchy's Theorem in a Disk.
L-6	Index of a Point w.r.t. a Closed Curve
L-7	Cauchy's Integral Formula and Higher Derivatives.
L-8	-----do-----
L-9	Removable Singularity, Zeroes and Pole
L-10	-----do-----
L-11	Taylor Theorem
L-12	The Maximum Principle.
	CLASS TEST
L-13	Chains and Cycles, Simple Connectivity, Homology
L-14	-----do-----
L-15	Cauchy's Theorem with Proof.
L-16	Locally Exact Differentials, Multiply Connected Region.
L-17	Residue theorem.
L-18	The argument Principle.
L-19	Evaluation of Definite Integrals.
L-20	Harmonic Function, Mean Value Property.
L-21	Poisson Formula.
L-22	Schwarz Theorem and Weierstrass's Theorem.
L-23	Reflection Principle.
L-24	Taylor and Laurent Series.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Avinash Chandra Upadhyaya
Discipline : M.Sc. Mathematics (Dual Degree).
Semester : Eighth Semester.
Subject : Mathematics for Finance and Insurance-MAT520H
Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction and overview of Financial Management
L-2	Nature & Scope of F.M.
L-3	Goals & Main Decisions of F.M.
L-4	Difference between Risk, Speculation & Gambling
L-5	Concept of Time Value Money
L-6	Interest Rate & Discount Rate
L-7	Present Value & Future Value discrete & continuous compounding cases
L-8	Problems based on P.V. & F.V.
L-9	Annuities and its kinds
L-10	Numerical problems based on Annuities & its kinds
	CLASS TEST
L-11	Meaning or Return, Return as Internal Rate of Return
L-12	Newton Raphson method to calculate I.R.R
L-13	Measurement of returns under uncertainty situations
L-14	Meaning of Risks, Difference between risk & uncertainty
L-15	Types of risks, Measurement of risks
L-16	Calculation of security & portfolio risk
L-17	Markowitz Model
L-18	Single Index Model
L-19	Systematic & Unsystematic risk
L-20	Problems based on Systematic & Unsystematic risk
	CLASS TEST
L-21	Taylor Series & Bond Valuation

L-22	Calculation of duration & convexity of bonds
L-23	Insurance Fundamentals
L-24	Meaning of loss, chances of loss in insurance
L-25	Peril, Hazard & Proximate cause in insurance
L-26	Cost & benefits of insurance to the society
L-27	Branches of insurance (Life Insurance, General Insurance, Etc.)
L-28	-----do-----
L-29	-----do-----
L-30	Introduction of concept of Life Insurance Mathematics
CLASS TEST	
L-31	Construction of Mortality Tables
L-32	Computation of premium of life insurance for a fixed duration
L-33	Computation of premium of life insurance for a whole life
L-34	-----do-----
L-35	Determination of amount of claims for General Insurance using Poisson Distribution
L-36	Determination of amount of claims for General Insurance using Negative Binomial Distribution
L-37	-----do-----
L-38	-----do-----
L-39	Calculation of claim density function F
L-40	Recursive & approximate formulae for F
CLASS TEST	

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Mr. Kapil Kumar
Discipline : M.Sc (Dual Degree)
Semester : Tenth Semester.
Subject : Inner Product Spaces and Advanced Measure Theory-MAT612H
Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction To linear Product Space
L-2	Do
L-3	Schwarz inequality
L-4	Hilbert space as normed linear space
L-5	Convex set in Hilbert spaces
L-6	Projection theorem
L-7	Orthonormal sets
L-8	Bessel's inequality
L-9	Parseval's identity
L-10	Conjugate of a Hilbert Space
L-11	Riesz Representation Theorem
L-12	Adjoint of a operator on a Hilbert space
L-13	Reflexivity of Hilbert space
L-14	Self adjoint operator
L-15	Positive and projection operators
L-16	Normal and unitary operator
L-17	Projections on Hilbert space
L-18	Spectral theorem on finite dimensional space
L-19	Do
L-20	Signed measure
L-21	Hahn Decomposition Theorem
L-22	Jordan decomposition Theorem
L-23	MUTUALLY SIGNED MEASURE
L-24	Radon-Nikodyn Theorem
L-25	Lebesgue decomposition
L-26	LEBESGUE – Stieltjes integral
L-27	Product measure
L-28	Do
L-29	Fubini's theorem
L-30	Do
L-31	L^p spaces
L-32	Jensen's inequality
L-33	Measure spaces

L-34	Generalized fatou's lemma
L-35	Measure and outer measure caratheodory extension theorem
L-36	Baire sets
L-37	Baire Measure
L-38	Continuous functions with compact support
L-39	Regularity of measure on locally compact spaces
L-40	Riesz OMmarkoff theorem

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Ms Bharti
Discipline : M.Sc. Mathematics(Dual Degree).
Semester : Tenth Semester.
Subject : Theory of Automata-MAT614H
Lesson Plan duration : 42 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction to Automata and characteristics of Automata
L-2	DFA and N DFA Introduction with examples.
L-3	Transition table and diagrams of DFA.
L-4	Transition table and diagrams of N DFA
L-5	Various examples on transition tables .
L-6	Examples on transition diagrams
L-7	Theorem of Equivalence of N DFA and DFA
L-8	Self test questions on theorem
L-9	Minimization of finite Automata.
L-10	Questions on Minimization of automata
	CLASS TEST
L-11	Introduction to Regular Expressions.
L-12	Algebraic laws and their formulas.
L-13	Kleens Theorem
L-14	Examples solution on kleens theorem.
L-15	Ardens theorem.
L-16	Questions on Ardens theorem
L-17	Pumping lemma for regular expressions and its application
L-18	Moore and Mealy Machine.
L-19	Equivalence of Moore and Mealy Machine.
L-20	Practice questions on Mealy and Moore Machines
	CLASS TEST
L-21	Introduction to Context free Grammars
L-22	How to check whether a given grammar is CFG or NOT
L-23	CFG Derivations
L-24	Examples on CFG Derivations
L-25	Derivation trees
L-26	Creation of LHS and RHS Derivation Trees
L-27	Ambiguity in Grammars.

L-28	Check whether a grammar is ambiguous or not
L-29	Chomsky Classification of Languages.
L-30	Chomsky Normal Form
L-31	Greibach Normal Form
L-32	Check whether a given grammar is in CNF or GNF
	CLASS TEST
L-33	Introduction to Context free languages
L-34	Closure properties of CFL's
L-35	-----do-----
L-36	-----do-----
L-37	Various examples on closure properties.
L-38	Pumping lemma for CFL's.
L-39	-----do-----
L-40	-----do-----
L-41	Simplification of Context free Grammar
L-42	Practice Questions on CFG.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr.Avinash Chandra Upadhyaya
 Discipline : M.Sc. Mathematics(Dual Degree).
 Semester : Tenth Semester.
 Subject : Optimization Techniques-MAT616H
 Lesson Plan duration : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Meaning & concept of Goal Programming
L-2	Difference between G.P. & L.P.
L-3	G.P. Model formulation
L-4	Graphical Method to solve G.P. Problem
L-5	-----do-----
L-6	Simplex method to solve G.P.Problem
L-7	-----do-----
L-8	Inter Programming
L-9	Types of I.P. Problems
L-10	Gomory's cutting plane method
	CLASS TEST
L-11	Branch & Bound technique to solve I.P. Problems
L-12	-----do-----
L-13	-----do-----
L-14	Dynamic Programming Introduction & concept
L-15	Bellman's Principle of optimality
L-16	Dynamic Programming under uncertainty
L-17	Shortest Route Problem, Multiplicative separable return function & single additive constraint
L-18	Additive separable return function & single additive constraint
L-19	Additive separable return function & single multiplicative constraint
L-20	-----do-----
	CLASS TEST
L-21	-----do-----
L-22	Dynamic Programming approach for solving I.P. Problem
L-23	-----do-----

L-24	-----do-----
L-25	Classical Optimization Methods
L-26	Unconstraint optimization of single independent variable function
L-27	Numerical Problems
L-28	-----do-----
L-29	Unconstraint optimization of Multivariable function
L-30	-----do-----
	CLASS TEST
L-31	Constraint optimization of Multivariable function with Equality
L-32	-----do-----
L-33	Constraint optimization of Multivariable function with inequality
L-34	-----do-----
L-35	Quadratic Programming
L-36	Khun -Tucker conditions
L-37	Wolfe's Method
L-38	-----do-----
L-39	Beale's Method
L-40	-----do-----
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

(Theory of linear operator- MAT 622H).

Name of the Faculty : Dr.Sanjay Kumar.
Discipline : M.Sc. Mathematics(Dual Degree).
Semester : 10th Semester.
Subject : Theory of linear operator(MAT 622H).
No. of Lesson Plan : 40 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Introduction of linear spaces, linear operators, Eigen values, Eigenvectors.
L-2	Introduction of spectral theory in normed linear spaces.
L-3	A discussion on Resolvent set, Spectrum and its properties.
L-4	Continued discussion on Resolvent set, Spectrum and its properties.
L-5	Spectral properties of bounded linear operators.
L-6	Continued discussion on Spectral properties of bounded linear operators.
L-7	Spectral mapping theorem for polynomials Spectral mapping theorem for polynomials
L-8	Continued discussion on Spectral mapping theorem for polynomials Spectral mapping theorem for polynomials.
L-9	Spectral radius and its properties on complex Banach spaces.
L-10	Recall of Algebra, elementary theory on Banach Algebra.
	CLASS TEST
L-11	Discussion continued on elementary theory on Banach Algebra.
L-12	Discussion continued on elementary theory of Banach Algebra..
L-13	Recall of compact set. Compact linear operator and General properties of compact linear operator in normed linear spaces.
L-14	Continued discussion on compact operator and General properties of compact linear operator in normed linear spaces.
L-15	Continued discussion on Spectral properties of compact operator
L-16	Behaviour of compact linear operator with respect to solvability of operator equation.
L-17	Continued discussion on Behaviour of compact linear operator with respect to solvability of operator equation.
L-18	A discussion on Some important theorems: Fredholm type theorems , Fredholm alternative theorem , Fredholm alternative for integral equations.
L-19	Continued discussion on Some important theorems: Fredholm type

	theorems, Fredholm alternative theorem , Fredholm alternative for integral equations.
L-20	A discussion on Some important theorems : Fredholm type theorems , Fredholm alternative theorem , Fredholm alternative for integral equations
	CLASS TEST
L-21	Spectral properties of bounded self adjoint linear operator on complex Hilbert spaces.
L-22	A discussion continued on Spectral properties of bounded self adjoint linear operator on complex Hilbert spaces.
L-23	A discussion continued on Spectral properties of bounded self adjoint linear operator on complex Hilbert spaces.
L-24	A discussion continued on Spectral properties of bounded self adjoint linear operator on complex Hilbert spaces.
L-25	Positive operator and its properties.
L-26	A discussion continued on Positive operator and its properties.
L-27	A discussion continued on Positive operator and its properties.
L-28	Monotone sequence theorem for bounded self adjoint operators on complex Hilbert spaces.
L-29	A discussion continued on Monotone sequence theorem for bounded self adjoint operators on complex Hilbert spaces.
L-30	Square root of a positive operator and its properties.
	CLASS TEST
L-31	A discussion continued on Square root of a positive operator and its properties.
L-32	A discussion continued on Square root of a positive operator and its properties.
L-33	A discussion continued on Square root of a positive operator and its properties.
L-34	Projection operator and its properties.
L-35	A discussion continued on Projection operator and its properties.
L-36	A discussion continued on Projection operator and its properties.
L-37	Spectral family of a bounded self adjoint linear operator and its properties.
L-38	A discussion continued on Spectral family of a bounded self adjoint linear operator and its properties.
L-39	A discussion continued on Spectral family of a bounded self adjoint linear operator and its properties.
L-40	A discussion continued on Spectral family of a bounded self adjoint linear operator and its properties.
	CLASS TEST

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018

Lesson Plan

Name of the Faculty : Dr. Yogita Godara

Discipline : M.Sc. Mathematics (Dual Degree).

Semester : 10th Semester.

Subject : Mechanics of solids-II (MAT-624 H).

Lesson Plan duration : 45 Lectures (From January 8, 2018 to April 27, 2018).

Lectures	Topic (including assignment and test)
L-1	Generalized plane stress,
L-2	Airy stress function for plane strain problems
L-3	General solutions of a Biharmonic equation using fourier transform and in terms of two analytic functions
L-4	-----do-----
L-5	-----do-----
L-6	Stresses and displacements in terms of complex potentials
L-7	Thick walled tube under external and internal pressures
L-8	-----do-----
L-9	Rotating shaft
	Class test
L-10	Extension of beams by longitudinal forces
L-11	-----do-----
L-12	Beam stretched by its own weight
L-13	-----do-----
L-14	Bending of beams by terminal couples
L-15	-----do-----
L-16	Bending of beams by a transverse load at the centroid of the end section along a principal axis
L-17	-----do-----
L-18	Torsion of a circular shaft
L-19	Torsion of cylindrical bars
L-20	Torsional rigidity
L-21	Torsion and stress functions
L-22	Lines of shearing stress
L-23	Simple problems of torsion of bars having circle, Ellipse and equilateral triangle cross-section.

L-24	-----do-----
	Class test
L-25	Simple harmonic progressive waves
L-26	Scalar wave equation and its progressive type solutions
L-27	Plane waves, Cylindrical waves, Spherical waves
L-28	-----do-----
L-29	Stationary type solutions in Cartesian and cylindrical coordinates
L-30	-----do-----
L-31	Propagation of waves in an unbounded isotropic elastic solid, P-, SV- and SH- waves
L-32	-----do-----
L-33	Wave propagation in two-dimensions
L-34	Elastic surface waves such as Rayleigh and Love waves.
L-35	-----do-----
	Class test
L-36	Variational problem related to biharmonic equation
L-37	-----do-----
L-38	Ritz method-one dimensional and two-dimensional cases
L-39	-----do-----
L-40	Galerkin methods and its applications to torsion of beams and deformation of plates
L-41	-----do-----
L-42	Method of Kantorovich, Trefftz methods and its application for upper bound for the torsional rigidity of beam
L-43	-----do-----
L-44	Rafalson method for the biharmonic equation
L-45	-----do-----
	Class test

Minor Tests

1. Minor Test-I Feb. 14-16, 2018
2. Minor Test-II April 4-6, 2018