

I.B. (PG) COLLEGE, PANIPAT

LESSON PLAN

SESSION 2023-24 (01.01.2024 to 30.04.2024)

Weekly Lesson Plan (Even Semester)

PG (II / IV - Semester)

Name of the Paper:- Partial Differential Equation

Class: M.Sc Final

Name of the Teachers (Section Wise) : Kirti Asija

WEEK	DATE	TOPICS
1	January (1-6)	Definition, Examples and classification of PDE of kth order
		Definition, Examples and classification of PDE of kth order
		Initial Value Problems
		Homogeneous Transport Equation
		Non Homogeneous Transport Equation
SUNDAY - 07.01.2024		
2	January (8-13)	Radial Solution of Laplace Equation
		Radial Solution of Laplace Equation
		Fundamental Solutions
		Harmonic Functions
		Properties of Harmonic functions
SUNDAY - 14.01.2024		
3	January (15-16)	Problem Discussion
		Test
	January (18-20)	Mean Value Formulas
		Related theorems
		Poisson's equation and its Solution
SUNDAY - 21.01.2024		
4	January (22-25)	Problems Discussion
		Strong Maximum Principle
	January (27)	Uniqueness of Strong maximum principle
		Local Estimate for Harmonic functions
		Local Estimate for Harmonic functions
HOLIDAY - 26.01.2024 - REPUBLIC DAY		
SUNDAY - 28.01.2024		
5	January (29-31)	Liouville's Theorem
		Harnack's Inequality
	February (1-3)	Problems Discussion
		Test
		Green Function and its Derivation
SUNDAY - 04.02.2024		

6	February (5-10)	Representation Formula using Green function
		Symmetry of Green's function
		Green Function for a Half Space
		Green Function for a Ball
		Energy Methods
		Uniqueness of energy Methods
SUNDAY - 11.02.2024		
7	February (12-13)	Problems Discussion
	February (15-17)	Test
		Dirichlet Principle
		Heat Equations
		Physical interpretation of Heat Equations
HOLIDAY 14.02.2024 - BASANT PANCHMI/SIR CHHOTU RAM JAYANTI		
SUNDAY - 18.02.2024		
8	February (19-24)	Fundamental solution of Heat Equation
		Fundamental solution of Heat Equation
		Integral of Fundamental Solution
		Problems Discussion
		Solution of Initial value Problem
		Duhamel's Principle
SUNDAY - 25.02.2024		
9	February (26-29)	Duhamel's Principle
		Non Homogeneous Heat Equation
		Mean Value Formula for Heat Equation
	March (1-2)	Mean Value Formula for Heat Equation
		Strong Maximum Principle
		Test
SUNDAY - 03.03.2024		
10	March (4-7)	Uniqueness of Strong Maximum Principle
		Uniqueness of Strong Maximum Principle
	March (9)	Energy Methods
		Related theorems
		Problems Discussion
		Test
HOLIDAY - 08.03.2024 - MAHA SHIVRATRI		
SUNDAY - 10.03.2024		
11	March (11-16)	Wave Equation
		Physical interpretation of Wave Equations
		Solution of one dimensional wave equation
		D'alembert formula
		Applications of D'alembert principle
SUNDAY - 17.03.2024		

12	March (18-22)	Reflection Method
		Reflection Method
		Solution by Spherical means
		Solution by Spherical means
		Euler Poisson Darboux equation
		Kirchhoff's Formula
HOLI VACATION - 23.03.2024 - 31.03.2024 (SHAHEEDI DIWAS - 23.03.2024)		
13	April (1-6)	Problems Discussion
		Poisson's Formula
		Poisson's Formula
		Solution of Non Homogeneous Wave Equation for $n=1$
		Solution of Non Homogeneous Wave Equation for $n=3$
		Energy Methods
SUNDAY - 07.04.2024		
14	April (8-10)	Uniqueness of Solution
		Finite Propagation speed of Wave equation
		Finite Propagation speed of Wave equation
	April (12-13)	Non Linear first order Partial Differential Equations
		Problems Discussion
		Test
HOLIDAY - 11.04.2024 - ID-UL-FITR		
SUNDAY - 14.04.2024		
15	April (15-16)	Complete Integrals
		Characteristics of Linear, quasilinear and fully non linear PDE
	April (18-20)	Legendre Transform
		Plane and Travelling Waves
		Similarity under Scaling
HOLIDAY - 17.04.2024 - RAM NAVMI		
SUNDAY - 21.04.2024		
16	April (22-27)	Fourier Transform
		Laplace Transform
		Conversion of Non Linear into linear PDE
		Conversion of Non Linear into linear PDE
		Hodograph and Legendre Transforms
		Hodograph and Legendre Transforms
SUNDAY - 28.04.2024		
17	April (29-30)	Revision
		Revision
		Test
		Test
University Examinations w.e.f. 01.05.2024		

I.B. (PG) COLLEGE, PANIPAT

LESSON PLAN

SESSION 2023-24 (01.01.2024 to 30.04.2024)

Weekly Lesson Plan (Even Semester)

PG (II / IV - Semester)

Name of the Paper:- Boundary Value Problem

Class: M.Sc(F) sem-4

Name of the Teachers (Section Wise) : Ms. Sumit

WEEK	DATE	TOPICS
1	January (1-6)	Initial value problem
		Initial value problem
		Final value problem
		Final value problem
		Examples
		Examples
SUNDAY - 07.01.2024		
2	January (8-13)	Transverse oscillation of a homogenous elastic bar
		Dirac Delta function
		Greens function approach for the operator L
		Solution of Self adjoint I.V.P.
		Examples
SUNDAY - 14.01.2024		
3	January (15-16)	Solution of self adjoint B.V.P.
		Properties of Greens function
		Examples
	January (18-20)	Examples
		nth order self adjoint B.V.P.
SUNDAY - 21.01.2024		
4	January (22-25)	nth order self adjoint B.V.P.
		Modified Greens function
	January (27)	Modified Greens function
		Modified Greens function
		Modified Greens function
		Problem Discussion
HOLIDAY - 26.01.2024 - REPUBLIC DAY		
SUNDAY - 28.01.2024		
5	January (29-31)	Application to partial differential equation
		Integral representation formula for the solution of Laplace Equation
		Integral representation formula for the solution of Poisson Equation
	February (1-3)	The Newtonian , single-layer and double layer potentials
		Interior and Exterior Dirichlet problem
		Interior and Exterior Dirichlet problem
SUNDAY - 04.02.2024		

6	February (5-10)	
		Greens function for the laplace equation in a free space as well as in a space bounded by a green vessel
		Integral equation formula of boundary value problems for laplace equation
		Poissons integral formula
		Poissons integral formula
greens function for the space bounded by grounded two parallel plates		
SUNDAY - 11.02.2024		
7	February (12-13)	Helmholtz equation
		Helmholtz equation
	February (15-17)	Problem discussion
		Integral Transform
		Integral Transform
HOLIDAY 14.02.2024 - BASANT PANCHMI/SIR CHHOTU RAM JAYANTI		
SUNDAY - 18.02.2024		
8	February (19-24)	Fourier transform
		Fourier transform
		Laplace transform
		Properties of Greens function
		Convolution integral
SUNDAY - 25.02.2024		
9	February (26-29)	Application to volterra integral equations with convolution type kernel
		Hilbert transform
	March (1-2)	Hilbert transform
		Examples
		Examples
SUNDAY - 03.03.2024		
10	March (4-7)	Two part boundary value problem
		Three part boundary value problem
	March (9)	Three part boundary value problem
		Generalised three part boundary value problem
		Generalised three part boundary value problem
HOLIDAY - 08.03.2024 - MAHA SHIVRATRI		
SUNDAY - 10.03.2024		
11	March (11-16)	Examples
		Problem discussion
		Class test
		Integral equation perturbation methods
		Integral equation perturbation methods
SUNDAY - 17.03.2024		

12	March (18-22)	Basic procedure
		Application to electrostatics
		Application to electrostatics
		Application to electrostatics
		Low-Reynolds-Number hydrodynamics
HOLI VACATION - 23.03.2024 - 31.03.2024 (SHAHEEDI DIWAS - 23.03.2024)		
13	April (1-6)	Steady stokes flow
		Boundary effects of stokes flow
		Longitudnal oscillations of solids in stokes flow
		Steady Rotary stokes flow
		Steady Rotary stokes flow
SUNDAY - 07.04.2024		
14	April (8-10)	Oseen flow
		Elasticity
	April (12-13)	Boundary effects
		Boundary effects
		Torsion and Rotary oscillation problems in elasticity
Cracks problem in elasticity		
HOLIDAY - 11.04.2024 - ID-UL-FITR		
SUNDAY - 14.04.2024		
15	April (15-16)	Theory of Diffraction
		Theory of Diffraction
	April (18-20)	Theory of Diffraction
		examples
HOLIDAY - 17.04.2024 - RAM NAVMI		
SUNDAY - 21.04.2024		
16	April (22-27)	revision
		revision
		revision
		revision
		revision
SUNDAY - 28.04.2024		
17	April (29-30)	revision
		revision
		revision
		revision
University Examinations w.e.f. 01.05.2024		

I.B. (PG) COLLEGE, PANIPAT

LESSON PLAN

SESSION 2023-24 (01.01.2024 to 30.04.2024)

Weekly Lesson Plan (Even Semester)

PG (II / IV - Semester)

Name of the Paper:- Algebraic Number Theory Class: M.SC II (SEMESTER-IV)

Name of the Teachers (Section Wise) : Ms. Komal

WEEK	DATE	TOPICS
1	January (1-6)	
		Introduction to Algebraic numbers and algebraic integers
		some results
		Theorem based upon algebraic number and algebraic integers
		Transcendental numbers
		theorem based on transcendental numbers
SUNDAY - 07.01.2024		
2	January (8-13)	Liouville's theorem for real algebraic numbers
		Doubt class
		Thue Theorem and Roth's Theorem
		Doubt class
		Algebraic number field K
		theorem based upon algebraic number field
SUNDAY - 14.01.2024		
3	January (15-16)	Theorem of primitive elements
	January (18-20)	corollaries and some results related to primitive elements
		Primitive m-th roots of unity
		Theorem related to mth root of unity
		problem solving
SUNDAY - 21.01.2024		
4	January (22-25)	cyclotomic polynomials
	January (27)	cyclotomic polynomial is monic., irreducible
		Liouville's Theorem for complex algebraic numbers
		Doubt class
		Minimal polynomial of an algebraic integer
HOLIDAY - 26.01.2024 - REPUBLIC DAY		
SUNDAY - 28.01.2024		
5	January (29-31)	some prepositions
	February (1-3)	Test
		Norm and Trace of algebraic numbers and algebraic integers
		Bilinear form on algebraic number field K
		doubts class
SUNDAY - 04.02.2024		

6	February (5-10)	Integral basis and discriminant of algebraic number field
		Index of an element of K
		Ring OK of algebraic integers of an algebraic number field K
		Test
		Ideals in the ring of algebraic number field K Integrally closed domains
SUNDAY - 11.02.2024		
7	February (12-13)	Integral basis and discriminant of algebraic number field
	February (15-17)	Index of an element of K
		Ring OK of algebraic integers of an algebraic number field K
		Test
SUNDAY - 18.02.2024		
8	February (19-24)	Ideals in the ring of algebraic number field K Integrally closed domains
		Fractional ideals of K
		Factorization of ideals as a product of prime ideals in ring of doubt class
SUNDAY - 25.02.2024		
9	February (26-29)	algebraic integers of an algebraic number field K G. C. D and L. C. M of ideals in Ok
	March (1-2)	Test
		Chinese remainder theorem
		Doubt class
		Different of an algebraic number field K
SUNDAY - 03.03.2024		
10	March (4-7)	Dedekind Theoem doubt class
	March (9)	Euclidean Rings
		theorem related to previous topic
		revision
		Hurwitz Lemma and Hurwitz constant
HOLIDAY - 08.03.2024 - MAHA SHIVRATRI		
SUNDAY - 10.03.2024		
11	March (11-16)	Test
		Equivalent fractional ideals
		problem solving
		doubt class
		revision
		Ideal class group
SUNDAY - 17.03.2024		

12	March (18-22)	Finiteness of the ideal class group
		class number of algebraic number field K
		Doubt class
		Diophantine equations minkowski's Bounds
		theorms based on minkowski's bounds
Quadratic reciprocity Legendre symbols		
HOLI VACATION - 23.03.2024 - 31.03.2024		
(SHAHEEDI DIWAS - 23.03.2024)		
13	April (1-6)	theorems based on quadratic reciprocity
		Gauss sums
		theorem related to gauss sum
		revision
		Law of quadratic reciprocity
Quadratic fields		
SUNDAY - 07.04.2024		
14	April (8-10)	Theorem based on it
		Primes in special progression
	April (12-13)	Theorem based on it
		Theorem based on it
		Theorem based on it
HOLIDAY - 11.04.2024 - ID-UL-FITR		
SUNDAY - 14.04.2024		
15	April (15-16)	revision
		revision
	April (18-20)	doubts class
		doubts class
		doubts class
HOLIDAY - 17.04.2024 - RAM NAVMI		
SUNDAY - 21.04.2024		
16	April (22-27)	test
		problem solving
		REVISION
		REVISION
		REVISION
SUNDAY - 28.04.2024		
17	April (29-30)	REVISION
		REVISION
		REVISION
		REVISION
University Examinations w.e.f. 01.05.2024		

I.B. (PG) COLLEGE, PANIPAT

LESSON PLAN

SESSION 2023-24 (01.01.2024 to 30.04.2024)

Weekly Lesson Plan (Even Semester)

PG (II / IV - Semester)

Name of the Paper:- Seismology

Class: M.Sc.(F)

Name of the Teachers (Section Wise) : Manish Kumar

WEEK	DATE	TOPICS
1	January (1-6)	General forms of prograssive waves
		basic defination of wave number ,wavelength etc.....
		Harmonic wave
		Plane wave ,the wave equation
		solution of one,two,three dimensional wave equation
SUNDAY - 07.01.2024		
2	January (8-13)	continued
		Principle of superposition
		Special type of solution
		Prograssive type solyution
		examples and theorem
SUNDAY - 14.01.2024		
3	January (15-16)	Stationary type solution for one dimensional
		Two dimensional wave equation
	January (18-20)	Three dimensional wave equation
		examples and theorem
		examples and theorem
SUNDAY - 21.01.2024		
4	January (22-25)	Equation of Telegraphy
		Exponential forms of harmonic wave
	January (27)	D Alembert formula
		Properties of formula
HOLIDAY - 26.01.2024 - REPUBLIC DAY		
SUNDAY - 28.01.2024		
5	January (29-31)	Inhomogeneous wave equation
		Dispersion :Group velocity
	February (1-3)	Relation between group and phase velocity
		examples and theorem
		revision
SUNDAY - 04.02.2024		

6	February (5-10)	Reduction of equation of motion to wave equation
		Continued...
		Continued...
		P and S wave and their characteristic
		Polarisation of plane P and S wave
SUNDAY - 11.02.2024		
7	February (12-13)	Snell law of reflection and refraction
	February (15-17)	Reflection of plane P and SV waves at a free surface
		continued..
		Continued..
		Continued...
HOLIDAY 14.02.2024 - BASANT PANCHMI/SIR CHHOTU RAM JAYANTI		
SUNDAY - 18.02.2024		
8	February (19-24)	Partition of reflected energy
		Reflection at critical angles
		Reflection and refraction of plane P waves at a interface
		Reflection and refraction of plane SV waves at a interface
		Reflection and refraction of plane SH waves at a interface
SUNDAY - 25.02.2024		
9	February (26-29)	Liquid-Liquid Interface
	March (1-2)	Liquid-Solid Interface
		Solid-Solid interface
		Rayleigh Waves
		Continued
SUNDAY - 03.03.2024		
10	March (4-7)	Love Waves
	March (9)	Stoneley waves
		Continued...
		Continued...
		revision
HOLIDAY - 08.03.2024 - MAHA SHIVRATRI		
SUNDAY - 10.03.2024		
11	March (11-16)	Two dimensional Lamb problem in an isotropic elastic solid
		Continued....
		Area source and Line sources in an unlimited elastic solid
		Continued..
		Normal force acts on surface of a semi infinite elastic solid
SUNDAY - 17.03.2024		

12	March (18-22)	Tangential force acting on the surface of semi infinite solid
		Tangential force acting on the surface of semi infinite solid
		Three Dimensional Lambs problem in an isotropic solid
		Three Dimensional Lambs problem in an isotropic solid
HOLI VACATION - 23.03.2024 - 31.03.2024 (SHAHEEDI DIWAS - 23.03.2024)		
13	April (1-6)	Area source and point source in an unlimited elastic solid
		Area source and point source on the surface of semi infinite
		Continued...
		Haskell matrix method for love waves
SUNDAY - 07.04.2024		
14	April (8-10)	Revision
		Class test
	April (12-13)	Expansion of a spherical wave into plane wave
		Sommerfield integral
		Kirchoff solution of wave equation
		Poissons Formula
HOLIDAY - 11.04.2024 - ID-UL-FITR		
SUNDAY - 14.04.2024		
15	April (15-16)	Problem Discussion
		Helmholtz Formula
	April (18-20)	Introduction to seismology
		Location of earthquake, aftershocks and Foreshocks
		Test
HOLIDAY - 17.04.2024 - RAM NAVMI		
SUNDAY - 21.04.2024		
16	April (22-27)	Earthquake magnitude, seismic moment
		Energy released by earthquakes, observation of earthquake
		Energy released by earthquakes, observation of earthquake
		Interior of the earth
		Interior of the earth
SUNDAY - 28.04.2024		
17	April (29-30)	revision
		revision
		Test
		Test
University Examinations w.e.f. 01.05.2024		

I.B. (PG) COLLEGE, PANIPAT

LESSON PLAN

SESSION 2023-24 (01.01.2024 to 30.04.2024)

Weekly Lesson Plan (Even Semester)

PG (II / IV - Semester)

Name of the Paper:- General Measure And Integration Theory Class: M.SC.(F)

Name of the Teachers (Section Wise) : Bhawna

WEEK	DATE	TOPICS
1	January (1-6)	Measures and its properties
		Outer measures
		Some results based on outer measures
		Extension of measures
		Uniqueness of extension
		Completion of a measure
SUNDAY - 07.01.2024		
2	January (8-13)	Combinations of measurable functions
		Limits of measurable functions
		Revision
		Localization of measurability
		Simple function
		Some more results of simple functions
SUNDAY - 14.01.2024		
3	January (15-16)	Revision
		Revision
		Localization of measurability
	January (18-20)	Simple function
		Section-II Measure spaces
		Some more results of Measure spaces
SUNDAY - 21.01.2024		
4	January (22-25)	Revision
		results of Measure spaces
	January (27)	Almost everywhere convergence
		Some more results of Almost everywhere convergence
		Fundamental almost everywhere
HOLIDAY - 26.01.2024 - REPUBLIC DAY		
SUNDAY - 28.01.2024		
5	January (29-31)	Some more results of fundamental almost everywhere
		Convergence in measure
		Fundamental in measure
	February (1-3)	Some more results of fundamental in measure and convergence in measure
		Almost uniform convergence
		Egoroff's theorem
SUNDAY - 04.02.2024		

6	February (5-10)	Riesz-Weyl theorem
		Integration with respect to a measure: Integrable simple functions
		Some more results of integrable simple functions
		Problem Discussion
		Non-negative integrable functions
		Some more results of non-negative integrable functions
SUNDAY - 11.02.2024		
7	February (12-13)	Integrable functions
	February (15-17)	Some more results of Integrable functions
		Indefinite integrals
		Some more results of Indefinite integrals
		The monotone convergence theorem
HOLIDAY 14.02.2024 - BASANT PANCHMI/SIR CHHOTU RAM JAYANTI		
SUNDAY - 18.02.2024		
8	February (19-24)	Revision
		The monotone convergence theorem
		Problem Discussion
		Test
		Mean convergence
		Mean convergence
SUNDAY - 25.02.2024		
9	February (26-29)	Some more results of Mean convergence
	March (1-2)	Some more results of Mean convergence
		Problem Discussion
		Test
		Product Measures: Rectangles
		Mean convergence
SUNDAY - 03.03.2024		
10	March (4-7)	Mean convergence
	March (9)	The Rado-Nikodym theorem for a finite measure space,
		Problem Discussion
		Test
		Product Measures: Rectangles
		Product Measures: Rectangles
HOLIDAY - 08.03.2024 - MAHA SHIVRATRI		
SUNDAY - 10.03.2024		
11	March (11-16)	Cartesian product of two measurable spaces
		Cartesian product of two measurable spaces
		Some more results of Cartesian product of two measurable spaces
		Measurable rectangle
		Some more results of measurable rectangle
		The product of two finite measure spaces
SUNDAY - 17.03.2024		

12	March (18-22)	The product of two finite measure spaces
		Some more results of the product of two finite measure spaces
		product of two σ -finite measure spaces
		Iterated integrals
		Fubini's Theorem
HOLI VACATION - 23.03.2024 - 31.03.2024 (SHAHEEDI DIWAS - 23.03.2024)		
13	April (1-6)	A partial converse to the Fubini's theorem
		Signed Measure: Absolute continuity
		Finite signed measure
		Contractions of a finite signed measure
		Purely positive and purely negative sets
SUNDAY - 07.04.2024		
14	April (8-10)	some results on Purely positive and purely negative sets
		Comparison of finite measures
	April (12-13)	Some more results of Comparison of finite measures
		Lebesgue decomposition theorem, A preliminary Radon-Nikodym theorem,
		Hahn decomposition, Jordan decomposition
upper variation, Lower variation, total variation, domination of finite signed		
HOLIDAY - 11.04.2024 - ID-UL-FITR		
SUNDAY - 14.04.2024		
15	April (15-16)	Baire sets
		Baire function
	April (18-20)	Baire-sandwich theorem
		Baire measure
		Borel set
HOLIDAY - 17.04.2024 - RAM NAVMI		
SUNDAY - 21.04.2024		
16	April (22-27)	Some results of Borel sets
		Regularity of Baire measures
		Some results of Regularity of Baire measures
		Regular Borel measures
		Some results of Regular Borel measures
Integration of continuous functions with compact support		
SUNDAY - 28.04.2024		
17	April (29-30)	The Radon-Nikodym theorem for a finite measure space,
		Riesz-Markoff's theorem
		Revision
		Revision
University Examinations w.e.f. 01.05.2024		