I.B. (PG) COLLEGE, PANIPAT
LESSON PLAN
SESSION 2023-24 (05.08.2023 to 24.11.2023)

Weekly Lesson Plan (Odd Semester)
PG (III - Semester)
Name of the Paper:- AMCV **Class: M.Sc (FINAL)**
Name of the Teachers (Section Wise) : Ms. Komal

WEEK	DATE	TOPICS
1	**August (5)**	Hawan
SUNDAY - 06.08.2023		
2	**August (7-12)**	Introduction of paper
		Basic Definitions
		Motivating problem of COV
		Shortest distance formula
		Euler's theorem
		Example
SUNDAY - 13.08.2023		
3	**August (14-19)**	minimum surface of revolution
		Brachistochrone problem
		Isoperimetric problem
		Geodesic problem
		Examples
HOLIDAY - 15.08.2023 - INDEPENDENCE DAY		
SUNDAY - 20.08.2023		
4	**August (21-26)**	Fundamental lemma of COV
		Euler's functional depends on n variables
		Variational derivative
		Invariance of euler's equation
		Examples
		Test of unit 1
SUNDAY - 27.08.2023		
5	**August (28-29, 31) September (1-2)**	Constrained system
		Classification
		Generalised coordinates
		Holonomic and non holonomic system
		Scleronomic and rheonomic system
HOLIDAY - 30.08.2023 - RAKSHABANDHAN		
SUNDAY - 03.09.2023		
6	**September (4-5, 7-9)**	Generalised potential
		Possible and virtual displacement
		Ideal constrained
		Lagrange's equation of first kind
		D'Alembert principle
HOLIDAY - 06.09.2023 - JANAMASHTMI		
SUNDAY - 10.09.2023		
7	**September (11-16)**	Independent coordinates holonomic system
		Generalised force
		Lagrange's equation of second kind
		Uniqueness of solution
		Variation of total energy
		Potential force and Gyroscopic force
SUNDAY - 17.09.2023		
8	**September (18-22)**	Dissipative force
		Lagrange's equation for potential force
		Conservative field
		discussion of previous year question papers
		Problem discussion
		Test of unit 2

HOLIDAY 23.09.2023 - SHAHEEDI DIVAS/HARYANA WAR HEROES' MARTYRDOM DAY		
SUNDAY - 24.09.2023		
9	**September (25-30)**	Hamilton's variable
		Don Kin’s theorem
		Hamiton canonical equation
		Routh’s equation
		Example
		Routh’s equation
SUNDAY - 01.10.2023		
HOLIDAY - 02.10.2023 MAHATMA GANDHI JAYANTI		
10	**October (3-7)**	Poission’s Bracket
		Cyclic coordinates of possion
		Poission identity
		Example
		Jacobi poission theorem
SUNDAY - 08.10.2023		
11	**October (9-14)**	Hamilton princple
		Second form of hamilton principle
		Poincare carton integral equation
		Whittaker’s equation
		Jacobi equation
		principle of least action
SUNDAY - 15.10.2023 & HOLIDAY (MAHARAJA AGRASEN JAYANTI)		
12	October (16-21)	canonical transformation
		Free canonical transformation
		Hamilton jacobi equation
		Hamilton jacobi equation
		Jacobi theorem
		Method of sepration of variable
SUNDAY - 22.10.2023		
13	October (23, 25-27)	Method of sepration of variable
		Testing of canonical character
		Lagrange brackets
		Condtion on canonical character
		Condtion on canonical character
		Canonical character in terms of langrange’s bracket
HOLIDAY - 24.10.2023 DUSSEHRA		
HOLIDAY 28.10.2023 - MAHARISHI VALMIKI JAYANTI		
SUNDAY -29.10.2023		
14	October (30-31) November (2-4)	Canonical character in terms of poission’s bracket
		Simplical nature of jacobian matrix
		Simplical nature of jacobian matrix
		Invariance of Lagrange’s bracket
		Invariance of poission bracket
HOLIDAY 01.11.2023 - HARYANA DAY		
15	**November (6-9)**	Invariance of euler’s equation
		Problem Discussion
		Problem Discussion
		previous year question practice
Diwali Break - 10.11.2023 to 16.11.2023		
16	**November (17-18)**	Test of unit 4
		Revision
SUNDAY - 19.11.2023		
17	**November (20-24)**	Revision
		Revision
		Revision
		Revision
		Revision
25.11.2023 - Examinations		

I.B. (PG) COLLEGE, PANIPAT
LESSON PLAN
SESSION 2023-24 (05.08.2023 to 24.11.2023)

Weekly Lesson Plan (Odd Semester)
PG (III - Semester)
Name of the Paper:- Functional Analysis **Class: M.SC. (Final Year)**
Name of the Teachers (Section Wise) : Mrs. Bhawna

WEEK	DATE	TOPICS
1	August (5)	Basic definition
SUNDAY - 06.08.2023		
2	August (7-12)	Introduction to linear space
		Introduction to Linear Space, Norm Linear Space
		Examples of normed linear space, Semi Norm
		Induced metric property
		Covergence and cauchy sequence
		Complete norm linear space
SUNDAY - 13.08.2023		
3	August (14-19)	Banach Spaces and its examples
		Completeness of quotient space
		Subspace of banach space
		Riesz-Fischer theorem
		Norm linear space which is not complete
HOLIDAY - 15.08.2023 - INDEPENDENCE DAY		
SUNDAY - 20.08.2023		
4	August (21-26)	Finite dimentional normed spaces and subspaces
		Equivalent norms
		Linear transformations
		Compactness and finite dimention
		F.Riesz lemma, F.Riesz Theorem
		F.Riesz lemma, F.Riesz Theorem
SUNDAY - 27.08.2023		
5	August (28-29, 31) September (1-2)	Bounded linear operator
		Continuous linear operator
		Differentiation operator, Int6egral Operator
		Bounded linear extentions
		Linear functions
HOLIDAY - 30.08.2023 - RAKSHABANDHAN		
SUNDAY - 03.09.2023		
6	September (4-5, 7-9)	Bounded linear functions
		Continuity &boundedness
		Definite integral, Canonical mapping
		Linear operator
		Functional on finite dimentional space
HOLIDAY - 06.09.2023 - JANAMASHTMI		
SUNDAY - 10.09.2023		
7	September (11-16)	Normed spaces of operators
		Dual spaces with examples
		Hahn - Banach theorem for real linear spaces
		Complex linear spaces, for normed linear spaces
		Application to bounded linear functional on C[a,b]
		Riesz-Representation theorem
SUNDAY - 17.09.2023		
8	September (18-22)	Adjoint operator
		Norm of adjoint operator
		Reflexive spaces
		theorems on reflexive spaces
		Uniform boundedness theorem
		Uniform boundedness theorem

HOLIDAY 23.09.2023 - SHAHEEDI DIVAS/HARYANA WAR HEROES' MARTYRDOM DAY		
SUNDAY - 24.09.2023		
9	**September (25-30)**	Theorem on weak convergence
		Convergence of sequences of operators
		Uniform operator convergence
		Strong operator convergence
		Weak operator convergence
		Weak operator convergence
SUNDAY - 01.10.2023		
HOLIDAY - 02.10.2023 MAHATMA GANDHI JAYANTI		
10	**October (3-7)**	Strong convergence of sequence of functional
		Weak convergence of sequence of functional
		Open mapping theorem
		Bounded inverse theorem
		Closed linear operator
SUNDAY - 08.10.2023		
11	**October (9-14)**	Closed graph theorem
		Differential operator
		Relation between closedness and boundedness of linear operator
		Inner product spaces
		Hilbert spaces and thier examples
		Pythagorean theorem
SUNDAY - 15.10.2023 & HOLIDAY (MAHARAJA AGRASEN JAYANTI)		
12	**October (16-21)**	Apolloniu's Identity
		Schwarz Inequality
		Continuity of inner product
		Completion of an inner product space
		Subspace of a Hilbert space
		Orthogonal complements and direct sums
SUNDAY - 22.10.2023		
13	**October (23, 25-27)**	Projections theorems
		Characterization of sets in hilbert space whose space is dense
		Bessel's inequality, Gram Schmidt process of orthonormalization
		Total orthonormal sets and sequences, Parseval's Identity
		Separable hilbert spaces, Representation of functions on hilbert spaces
		RRT for bounded linear functional on hilbert spaces
HOLIDAY - 24.10.2023 DUSSEHRA		
HOLIDAY 28.10.2023 - MAHARISHI VALMIKI JAYANTI		
SUNDAY -29.10.2023		
14	**October (30-31) November (2-4)**	Sesquilinear form, RRT for bounded sesquilinear form on hilbert spaces
		Hilbert adjoint operator
		Revision
		Revision
		Self Adjoint and its theorems
HOLIDAY 01.11.2023 - HARYANA DAY		
15	**November (6-9)**	Self Adjoint and its theorems
		Unitary operator
		Normal operator
		Positive and Projection operator
Diwali Break - 10.11.2023 to 16.11.2023		
16	**November (17-18)**	Positive and Projection operator
		Revision
SUNDAY - 19.11.2023		
17	**November (20-24)**	Revision
		Zero operator &its theorems
		Zero operator &its theorems
		Discussion of previous year question papers
		Discussion of previous year question papers
25.11.2023 - Examinations		

I.B. (PG) COLLEGE, PANIPAT
LESSON PLAN
SESSION 2023-24 (05.08.2023 to 24.11.2023)

Weekly Lesson Plan (Odd Semester)
PG (III - Semester)
Name of the Paper :- Algebraic coding theory **Class:- M.Sc. Final**
Name of the Teachers (Section Wise) : Sumit Geahlan

WEEK	DATE	TOPICS
1	August (5)	introduction to Algebraic Coding Theory
SUNDAY - 06.08.2023		
2	August (7-12)	Introduction to Algebraic Coding Theory - Basic terms and definition
		Introduction to Algebraic Coding Theory - Basic terms and definition
		Block Codes, Minimum distance of a code
		Principle of maximum likelihood , Binary error detecting codes
		Binary error correcting codes
		Group Codes, minium distance of a group code
SUNDAY - 13.08.2023		
3	August (14-19)	(m,m+1) Parity check codes
		Double and triple repition codes
		Double and triple repition codes
		Matrix Code
		Generator Matrix
HOLIDAY - 15.08.2023 - INDEPENDENCE DAY		
SUNDAY - 20.08.2023		
4	August (21-26)	Decoding by Coset Leaders
		Parity check Matrix
		Doubt Clearing Class
		Relation between Generator and Parity Check matrix over binary field
		Polynomial Code, polynomial code is a group code
		Error polynomial, Exponent of a function
SUNDAY - 27.08.2023		
5	August (28-29, 31) September (1-2)	Polynomial code as a matrix code
		Numericals to find Parity ckeck matrix for given polynomial code
		Numericals to find Parity ckeck matrix for given polynomial code
		Binary representation of a number
		Polynomial code as a matrix code
HOLIDAY - 30.08.2023 - RAKSHABANDHAN		
SUNDAY - 03.09.2023		
6	September (4-5, 7-9)	Numericals to find Parity ckeck matrix for given polynomial code
		Numericals to find Parity ckeck matrix for given polynomial code
		Binary representation of a number
		Construction of finite fields
		Primitive element of a finite field
HOLIDAY - 06.09.2023 - JANAMASHTMI		
SUNDAY - 10.09.2023		
7	September (11-16)	Irreduciblity of polynomials over finite field
		Numericals to find monic irreducible polynomial of given degree and field
		Extension of field, Finite extension is algebraic
		Kronecker's Theorem, Splitting Field
		Primitive polynomial over finite field
		Automorphism groups of GF(q^n),Normal basis of GF(q^n)
SUNDAY - 17.09.2023		
8	September (18-22)	Automorphism groups of GF(q^n),Normal basis of GF(q^n)
		Number of irreducible polynomials over a finite field
		Order of an irreducible polynomial
		Order of an irreducible polynomial
		Generator polynomial of BCH codes and construction
		Numericals based on the construction of binary BCH Code

HOLIDAY 23.09.2023 - SHAHEEDI DIVAS/HARYANA WAR HEROES' MARTYRDOM DAY		
SUNDAY - 24.09.2023		
9	**September (25-30)**	Numericals based on the construction of binary BCH Code
		Class test of the topics covered
		Linear Codes, Generator matrices of linear codes
		Equivalent codes and permutation matrices
		Equivalent codes and permutation matrices
		Relation between generator and parity check matrix of a linear codes over a finite field
SUNDAY - 01.10.2023		
HOLIDAY - 02.10.2023 MAHATMA GANDHI JAYANTI		
10	**October (3-7)**	Relation between generator and parity check matrix of a linear codes over a finite field
		Dual code of a linear code
		Self dual codes
		Weight distribution of a linear code
		Weight distribution of a linear code
SUNDAY - 08.10.2023		
11	**October (9-14)**	Hadamard Transform
		Macwilliams identity for binary linear codes
		Doubt Clearing Class
		Maximum distance separable codes (MDS Codes)
		Examples of MDS Codes
		Characterisation of MDS Codes in terms of generator and parity check matrices
SUNDAY - 15.10.2023 & HOLIDAY (MAHARAJA AGRASEN JAYANTI)		
12	**October (16-21)**	Dual code of a MDS code
		Trivial MDS codes
		Weight distribution of a MDS code
		Number of code words of minimum distance d in a MDS Code
		Reed Solomor Codes
		Doubt Clearing Class
SUNDAY - 22.10.2023		
13	**October (23, 25-27)**	Class test based on the topics covered
		Hadamard Matrices
		Hadamard Matrices
		Existence of a Hadamard Matrix of order n
		Normalised Hadamard matrix of order n
		Hadamard Codes from Hadamard matrices
HOLIDAY - 24.10.2023 DUSSEHRA		
HOLIDAY 28.10.2023 - MAHARISHI VALMIKI JAYANTI		
SUNDAY -29.10.2023		
14	**October (30-31) November (2-4)**	Cyclic Codes
		Generator polynomial of a cyclic code
		Check polynomial of a cyclic code
		Examples of cyclic codes
		Hamming and BCH codes as cyclic codes
HOLIDAY 01.11.2023 - HARYANA DAY		
15	**November (6-9)**	Perfect Codes
		The Gilbert-varsha-move and Plotkin bounds
		Self dual binary cyclic codes
		Problems discussion and revision
Diwali Break - 10.11.2023 to 16.11.2023		
16	**November (17-18)**	test
		revised test
SUNDAY - 19.11.2023		
17	**November (20-24)**	basic of coding theory
		recall breif summary of full syllabus
		revision
		test
		test
25.11.2023 - Examinations		

I.B. (PG) COLLEGE, PANIPAT
LESSON PLAN
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Weekly Lesson Plan (Odd Semester)
PG (III - Semester)
Name of the Paper:-Integral Equation **Class: MSC(F)**
Name of the Teachers (Section Wise) : Manish Kumar

WEEK	DATE	TOPICS
1	August (5)	Basic about Equation
		SUNDAY - 06.08.2023
2	August (7-12)	
		Definition of integral equations and its type
		eigen value and eigen function
		types of kernal
		types of kernal
		The inner or scaler product
		SUNDAY - 13.08.2023
3	August (14-19)	The inner or scaler product
		The inner or scaler product
		The inner or scaler product
		Reduction to a system of algebraic equations
		HOLIDAY - 15.08.2023 - INDEPENDENCE DAY
		SUNDAY - 20.08.2023
4	August (21-26)	Reduction to a system of algebraic equations
		Examples
		Examples
		Examples
		Examples
		Examples
		SUNDAY - 27.08.2023
5	August (28-29, 31) September (1-2)	Problem Discussion
		Test
		Fredholm alternative thm
		Fredholm alternative thm
		discussion on thm
		HOLIDAY - 30.08.2023 - RAKSHABANDHAN
		SUNDAY - 03.09.2023
6	September (4-5, 7-9)	Examples
		Examples
		Problem Discussion
		Test
		HOLIDAY - 06.09.2023 - JANAMASHTMI
		SUNDAY - 10.09.2023
7	September (11-16)	Approximate method
		Approximate method
		Approximate method
		Method of succesive approximation
		Examples
		Method of succesive approximation
		SUNDAY - 17.09.2023
8	September (18-22)	Method of succesive approximation
		Newmann series
		Newmann series
		Resolvent kernal
		Resolvent kernal
		Resolvent kernal

HOLIDAY 23.09.2023 - SHAHEEDI DIVAS/HARYANA WAR HEROES' MARTYRDOM DAY		
SUNDAY - 24.09.2023		
9	**September (25-30)**	Examples based on succesive approximation
		Examples based on succesive approximation
		Examples based on succesive approximation
		Iterative scheme for fredholm integral equation
		Iterative scheme for fredholm integral equation
		Iterative scheme for volterra equation
SUNDAY - 01.10.2023		
HOLIDAY - 02.10.2023 MAHATMA GANDHI JAYANTI		
10	**October (3-7)**	Iterative scheme for volterra equation
		Iterative scheme for volterra equation
		Conditions of uniform convergence
		Conditions of uniform convergence
		Uniqueness of series solution
SUNDAY - 08.10.2023		
11	**October (9-14)**	Examples
		Examples
		Examples
		Examples
		Some results about resolvent kernal
		Some results about resolvent kernal
SUNDAY - 15.10.2023 & HOLIDAY (MAHARAJA AGRASEN JAYANTI)		
12	**October (16-21)**	Application of iterative scheme to volterra equations
		Examples
		Problem Discussion
		Meethod of solution of fredholm equation
		Fredholm first thm
		Fredholm first thm
SUNDAY - 22.10.2023		
13	**October (23, 25-27)**	Fredholm second thm
		Fredholm second thm
		Fredholm second thm
		Class discussion
		Symmetric kernal introduction
HOLIDAY - 24.10.2023 DUSSEHRA		
HOLIDAY 28.10.2023 - MAHARISHI VALMIKI JAYANTI		
SUNDAY -29.10.2023		
14	**October (30-31) November (2-4)**	complex hilbert space
		orthonormal system of function
		orthonormal system of function
		Riesz Fisher Thm
		Problem Discussion
HOLIDAY 01.11.2023 - HARYANA DAY		
15	**November (6-9)**	A complete two dimensional orthonormal set
		Fundamental Property of eigen value and function
		expansion in eigen function and bilinear form
		examples
Diwali Break - 10.11.2023 to 16.11.2023		
16	**November (17-18)**	expansion in eigen function and bilinear form
		expansion in eigen function and bilinear form
SUNDAY - 19.11.2023		
17	**November (20-24)**	expansion in eigen function and bilinear form
		expansion in eigen function and bilinear form
		Examples
		Revision
		Test
25.11.2023 - Examinations		

I.B. (PG) COLLEGE, PANIPAT
LESSON PLAN
SESSION 2023-24 (05.08.2023 to 24.11.2023)

Weekly Lesson Plan (Odd Semester)
PG (III - Semester)
Name of the Paper:- NUMBER THEORY **Class: M.Sc (Final)**
Name of the Teachers (Section Wise) : Ms. Komal

WEEK	DATE	TOPICS
1	August (5)	Hawan
		SUNDAY - 06.08.2023
2	August (7-12)	Introduction to basic Number theory
		Division Algorithm
		Divisibility and properties
		Gauss theorem
		GCD & LCM
		Examples based on gcd and division Algorithm
		SUNDAY - 13.08.2023
3	August (14-19)	Examples based on division Algorithm some
		some theorems on divisibility
		The Linear Diaphontine equation
		Numericals on Linear Diaphontine equation
		Theorems based on Diaphontine equation
		HOLIDAY - 15.08.2023 - INDEPENDENCE DAY
		SUNDAY - 20.08.2023
4	August (21-26)	examples based on Diaphontine equation
		Linear Congruence
		Related theorems on linear Congruences
		Cancellation law
		Unimodular Matrix and related theorem
		Pythagorean triplet
		SUNDAY - 27.08.2023
5	August (28-29, 31) September (1-2)	Related theorems on pythagorean triplet
		Primitive Solutions
		theorems based on Primitive solutions
		examples on pythagorean triplet
		examples on pythagorean triplet
		HOLIDAY - 30.08.2023 - RAKSHABANDHAN
		SUNDAY - 03.09.2023
6	September (4-5, 7-9)	Assorted examples
		assorted examples
		Rational points on curve
		previous year questions Discussion based on unit 1
		Test of unit 1
		HOLIDAY - 06.09.2023 - JANAMASHTMI
		SUNDAY - 10.09.2023
7	September (11-16)	Farey Sequences and properties
		Farey table and its properties
		Theorems based on Farey Sequences
		Examples on farey Sequences
		theorems on Farey Sequences
		theorems on Farey Sequences
		SUNDAY - 17.09.2023
8	September (18-22)	some more examples on Farey Sequences
		Rational Approximation
		examples on Rational Approximation
		Irrational Numbers
		theorems on irrational Numbers
		theorems on irrational Numbers

HOLIDAY 23.09.2023 - SHAHEEDI DIVAS/HARYANA WAR HEROES' MARTYRDOM DAY		
SUNDAY - 24.09.2023		
9	**September (25-30)**	theorems on irrational Numbers
		Examples based on irrational numbers
		Examples on irrational numbers
		some more examples
		The Geometry of numbers
		Blichfeldts principle
SUNDAY - 01.10.2023		
HOLIDAY - 02.10.2023 MAHATMA GANDHI JAYANTI		
10	**October (3-7)**	Minkowski convex body theorem
		some examples
		Minkowski convex body theorem for general lattice
		Langranges four square theorem
		previous year questions Discussion based on unit 2
SUNDAY - 08.10.2023		
11	**October (9-14)**	test of unit 2
		Continued Fraction
		Continued Fraction Related theorems
		examples on continued Fraction
		Some more theorems on continued Fraction
		Results on continued Fraction
SUNDAY - 15.10.2023 & HOLIDAY (MAHARAJA AGRASEN JAYANTI)		
12	**October (16-21)**	Infinite continued Fraction
		Related theorems
		Related theorems
		Examples on continued Fraction
		examples on continued Fraction
		Limit form of infinite continued Fraction
SUNDAY - 22.10.2023		
13	**October (23, 25-27)**	Some related theorems
		theorems on limit form of infinite continued Fraction
		Some examples on continued Fraction
		Some examples on continued Fraction
		Some examples on continued Fraction
		Approximation to irrational numbers
HOLIDAY - 24.10.2023 DUSSEHRA		
HOLIDAY 28.10.2023 - MAHARISHI VALMIKI JAYANTI		
SUNDAY -29.10.2023		
14	**October (30-31) November (2-4)**	Related theorems
		Hurwitz theorem
		Best possible Approximation theorem
		periodic continued fraction
		previous year questions Discussion based on unit 3
HOLIDAY 01.11.2023 - HARYANA DAY		
15	**November (6-9)**	Partition
		Ferrers graph Related theorems
		Generating function, Related theorems on generating function
		Eulers identity& Eulers formula
Diwali Break - 10.11.2023 to 16.11.2023		
16	**November (17-18)**	bounds on P(n) some more theorems problem
		Jacobi formula
SUNDAY - 19.11.2023		
17	**November (20-24)**	related theorems
		A divisibility property & some theorem on P(n)
		previous year questions Discussion based on unit 4& problem Discussion
		previous year questions Discussion based on unit 3
		unit 4
25.11.2023 - Examinations		