RPS Degree College, Balana (Mahendergarh)

Lesson Plan

2020-21(Odd Semester)

Class : M.Sc. Mathematics

Subject: Mathematical Analysis

Name of the Faculty : Vikash kumar

Lecture	Topics
1	Introduction to Syllabus, Scheme of Exam & Learning Objectives/Outcomes
2	Test to Check the Learning Level of the Students
3	Basic of sets and Functions
4	Lower sum and upper sums
5	Riemann integral
6	Property of Riemann integral
7	Riemann-Steiljes integral
8	Algebra of Riemann integral
9	Algebra of Riemann -Steiljes integral
10	R-S integral of functions
11	R-S integral of composition of functions
12	Integrations and Diffrentations
13	R-S of continuous function
14	Fundamental theorem of calculus
15	Examples based on Fundamental theorem
16	R-S of a countable discontinuous functions
17	Generalized R-S integral
18	Darboux sums
19	Integrations of vector valued functions
20	Rectifiable curves
21	Sequence of treal numbers
22	Convergence of sequence
23	Sequence of functions
24	Series of functions
25	Pointwise convergence of sequence
26	Uniform convergence
27	Weierstrass M test
28	M_n Test for for uniform convergence
29	Abel's test
30	Dirichlet's test
31	Uniform convergence and continuity
32	Uniform convergence and integration
33	Uniform convergence and Differentiation
34	Weierstrass approximation test
35	Uniform convergence of series of functions
36	Power series
37	Uniform convergence and uniqueness theorem
38	Abel's Theorem
39	Tauber's Theorem
40	Functions of severals variables
41	Linear transformations
42	Euclidean Space
43	Derivative of an open subset R^n

44	Chain rule
45	Partial Derivative
46	Continuously Differentiable mapping
47	Young's Theorem
48	Schwarz Theorem
49	Examples based on Continuously Differentiable mapping
50	Example based on Tubers theorem
51	Taylors theorem
52	Heigher order Derivative
53	Explicit and implicit function
54	Implicit function theorem
55	Inverse function theorem
56	Change of variables
57	Extreme value of Explicit function
58	Lagrange Multipliers function
59	Jacobian
60	Properties of Jacobian

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Lesson Plan

Class and Section: M.Sc.(Math) 1st Sem.

Subject: Ordinary Differential Equation(Code: MAT-103)

Name of the Faculty : Dr. Parveen Kumar Gaur

1	Introduction to Syllabus, Scheme of Exam & Learning Objectives/Outcomes
2	Advancement
3	Test to Check the Learning Level of the Students
4	Preliminaries
5	Approximate solution
6	Cauchy-Euler construction of an approximate solution of an initial value problem
7	Cauchy-Euler construction of an approximate solution of an initial value problem
8	Equicontinuous family of functions
9	Equicontinuous family of functions
10	Ascoli-Arzela Lemma
11	Ascoli-Arzela Lemma
12	Cauchy-Peano existence theorem
13	Cauchy-Peano existence theorem
14	Lipschitz condition
15	Picard-Lindelof existence and uniqueness theorem
16	Picard-Lindelof existence and uniqueness theorem
17	Solution of initial-value problems by Picard's method
18	Solution of initial-value problems by Picard's method
19	Dependence of solutions on initial conditions.
20	Linear systems
21	Matrix method for homogeneous first order system of linear differential equations
22	Matrix method for homogeneous first order system of linear differential equations
23	Basic theory of the homogeneous linear system
24	Basic theory of the homogeneous linear system
25	Fundamental set of solutions
26	Fundamental matrix of solutions
27	Wronskian of solutions
28	Abel-Liouville formula
29	Abel-Liouville formula
30	Non-homogeneous linear system
31	Non-homogeneous linear system
32	Strum Theory
33	Strum Theory
34	Self-adjoint equations of the second order
35	Self-adjoint equations of the second order
36	Some basic results of Sturm theory
37	Abel's formula
38	Abel's formula
39	Strum Separation theorem

40	Strum Separation theorem
41	Strum's Fundamental comparison theorem
42	Strum's Fundamental comparison theorem
43	Nonlinear differential systems
44	Nonlinear differential systems
45	Phase plane
46	Path
47	Critical points
48	Autonomous systems
49	Autonomous systems
50	Isolated critical point
51	Path approaching a critical point
52	Path entering a critical point
53	Types of critical points - Center, Saddle points, Spiral points, Node points
54	Types of critical points - Center, Saddle points, Spiral points, Node points
55	Stability of critical points
56	Stability of critical points
57	Asymptotically stable critical points
58	Asymptotically stable critical points
59	Unstable critical points
60	Unstable critical points
61	Critical points and paths of linear systems.
62	Critical points and paths of linear systems.
63	Almost linear systems
64	Critical points and paths of almost linear systems
65	Critical points and paths of almost linear systems
66	Nonlinear conservative dynamical systems
67	Nonlinear conservative dynamical systems
68	Dependence on a parameter
69	Liapunov's direct method
70	Liapunov's direct method
71	Limit Cycles and Periodic solutions
72	Limit Cycles and Periodic solutions
73	Existence and nonexistence of limit cycles
74	Existence and nonexistence of limit cycles
75	Bendixson's nonexistence criterion
76	Poincare-Bendixson theorem
77	Index of a critical point
78	Strum-Liouville problems
79	Strum-Liouville problems
80	Orthogonality of characteristic functions

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Lesson Plan

Class and Section: M.Sc.(Math) 1st Sem

Subject: Complex Analysis(Code: MAT-104)

Name of the Faculty : Dr. Garima Tomar

	Topics
1	Introduction to Syllabus, Scheme of Exam & Learning Objectives/Outcomes
2	Test to Check the Learning Level of the Students
3	Functions of a complex variable
4	Limit and Continuity
5	Di♂erentiability
6	Examples on Continuity and differentiability
7	Analytic functions and their properties,
8	Analytic functions and their properties,
9	Cauchy-Riemann equations in Cartesian coordinates
10	Cauchy-Riemann equations in polar coordinates
11	Power series
12	Radius of convergence
13	Radius of convergence
14	Di♂erentiability of sum function of a power series
15	Successive differentiation
16	Branches of many valued functions
17	Arg z, Log z, Z^a
18	Path in a region, Contour
19	Complex integration and related questions
20	Cauchy theorem
21	Cauchy theorem questions
22	Cauchy integral formula
23	Cauchy integral formula questions
24	Extension of Cauchy integral formula for multiple connected domain
25	Poisson integral formula
26	Higher order derivatives
27	Complex integral as a function of its upper limit
28	Morera theorem
29	Cauchy inequality
30	Taylor theorem
31	Zeros of an analytic function
32	Laurent series
33	Laurent series
34	Isolated singularities questions
35	Cassorati-Weierstrass theorem
36	Limit point of zeros and poles
37	Maximum modulus principle

38	Schwarz lemma
39	Meromorphic functions
40	Meromorphic functions
41	Meromorphic functions
42	Argument principle
43	Rouche theorem
44	Questions on above topics
45	Fundamental theorem of algebra
46	Inverse function theorem
47	Calculus of residues
48	Calculus of residues
49	Cauchy residue theorem
50	Evaluation of integrals of various types
51	Evaluation of integrals of various types
52	Evaluation of integrals of various types
53	Evaluation of integrals of various types
54	Conformal mappings
55	Space of analytic functions and their completeness
56	Hurwitz theorem
57	Montel theorem
58	Riemann mapping theorem
59	Questions on above topics
60	Questions on above topics

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Lesson Plan

Class and Section: M.Sc. Mathematics 1st Sem

Subject: Mathematical Statistics

Name of the Faculty : Mr. Satyender Singh

Lecture	Topics
1	Introduction to Syllabus, Scheme of Exam & Learning Objectives/Outcomes
2	Concept of Probability
3	Defintions of Probability
4	Addition theorem
5	Multiplication theorem
6	Boole's Inequality
7	Conditional Probability
8	Numericals
9	Independence of events
10	Numericals
11	Baye's theorem
12	Numericals
13	Applications of Bayes' theorem
14	Random Variable
15	Probability functions
16	Probability mass and density functions
17	Cumulative distribution functions
18	Numericals
19	Concept of Bivariate random variable
20	Joint density functions
21	Numericals
22	Marginal Distributions
23	Conditional distribution
24	Numericals
25	Mathematical Expectation
26	Properties of Expectation
27	Variance and covariance in terms of expectation
28	Moment generating function
29	Properties of MGF
30	Discrete Distributions
31	Uniform Distribution
32	Bernoulli Distribution
33	Binomial Distribution
34	Properties of Binomial Distribution
35	Poisson Distribution
36	Properties of Poisson Distribution
37	Numericals
38	Continuous distributions
39	Uniform Distribution
40	Exponential Distribution
41	Properties of Exponential distributions
42	Normal Distribution
43	Properties of Normal distribution
44	Hypothesis testing
45	Parameter and statistic
46	Sampling distribution
47	Standard error of estimates
48	Null and alternative hypothesis
49	Types of hypothesis
50	Critical Region
51	Level of Significance
52	One Tailed and two tailed tests
53	Types of errors
54	Tests of significance
55	Large sample test for single mean
56	Single Proportion Hypothesis testing
57	Isometry
58	Test of difference between two means
59	Numericals
60	Test of difference between two proportions
61	Revision Section 4
62	continued
63	Revision Section 3
64	Revision Section 2
65	Revision Section 1

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Lesson Plan

Class and Section: M.S.c Math 1st sem
Subject:Computer Applicaions
Name of the Faculty :Poonam Kumari

Lecture	Topics
1	Introduction to Syllabus, Scheme of Exam &
2	Test to Check the Learning Level of the Students
3	Introduction,Characteristics of computer
4	Classification of Computers
5	Applications of Computer
6	Basic component of PC
7	Hardware,Software
8	Computer Memory
9	Secondary Memory
10	Computer Peripherals
11	Output Devices
12	Internet Basics
13	Surfing the internet
14	Sending Email
15	Introduction of MS Word
16	Working with MS-Word
17	Word basic commands
18	Formatting text and documents
19	Sorting and Tables
20	Working with graphics
21	Introduction to mail merge
22	Introduction to Electronic Spreadsheet,Applications of Electronic Spreadsheet
23	Features of MS-Excel
24	Main Components of MS-Excel Application Window
25	Entering data in a Worksheet,Creating a new Blank Workbook
26	Saving a Workbook
27	Closing a workbook
28	Opening an Existing Workbook
29	Saving an existing Workbook with a different name
30	Exit from MS-Excel
31	Selecting Cells,Naming a cell or cell range
32	Editing data
33	Managing Worksheets
34	Formatting a Worksheet
35	Printing a worksheet or a workbook
36	Creating a table
37	Formatting a table
38	Creating a Chart
39	Formulas in Excel
40	Cell reference and its types

41	Establishing link among various worksheets
42	Built-in Function
43	Sum Function
44	Lower Function
45	Average Function
46	Using Macro
47	Goal Seek:What-If Analysis
48	Presentation with powerpoint
49	Powerpoint basics
50	Creating presentations the easy way
51	Working with graphics in powerpoint
52	Show time
53	Sound effects
54	Animation effects
55	Revision
56	Revision