

# GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2023-2024

Name of Assistant/Associate Professor: Dr NARENDER SINGH

Class: B.Sc IIIrd Subject: Real and Complex

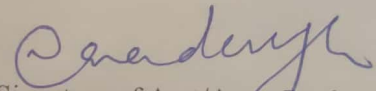
Semester: V

Months	Topics/Chapters to be Covered
January 2024	Salobians, Beta and Gamma Function, Double and Triple integrals. Dirichlet's integral, change of order of integration in double integrals.
February 2024	Fourier's series, Fourier expansion of piecewise monotonic functions, properties of Fourier-coefficients, Dirichlet's conditions, Parseval's identity for Fourier series, Fourier series for even and odd function, Half range series.
March 2024	Extended Complex plane, stereographic projection of Complex numbers, Continuity and differentiability of Complex functions, Analytic functions. Cauchy-Riemann equations

April  
2024

Mapping by elementary functions :-

Translation, rotation, magnification and  
Inversion Conformal mappings, Mobius transformations,  
fixed ~~point~~ points, Cross ratio, Inverse points  
and critical mapping.



Signature of Asst/Asso. Professor

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Name of Assistant/Associate Professor: DR NARENDER SINGH

Class: B.Sc Ist

Subject: Ordinary differential equations

Semester: IInd

Months	Topics/Chapters to be Covered
January 2024	Geometrical meaning of a differential equation. Exact differential equations. I.F., First order highest degree equations solvable for $x, y, p$ Lagrange's equations. Clairaut's equations. Equations reducible to Clairaut's form. Singular solutions.
February 2024	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.
March 2024	Linear differential equations of second order. Reduction to normal form. Transformation of the equations 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.



April  
2024

Ordinary simultaneous differential equation:

Solution of Simultaneous differential equation involving operators  $x$  ( $d/dx$ ) or  $t$  ( $d/dt$ ) etc.

Simultaneous equation of the form  $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$

Total differential eqns - conditions for  $Pdx + Qdy + Rdz = 0$  to be exact - general method of soln's  $Pdx + Qdy + Rdz = 0$  by taking one variable constant - method of auxiliary eqn

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Name of Assistant/Associate Professor: Dr NARENDER SINGH

Class: B.Sc. II<sup>nd</sup> Subject: ~~ordinary differential equations~~

Semester: IV sequence and series

Months	Topics/Chapters to be Covered
January 2024	Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set; mbd., interior points, isolated points, limit points, open set, interior of a set; closure of a set in real numbers and their properties; Bolzano-Weierstrass theorem, open covers, Compact sets and Heine-Borel Theorem.
February 2024	Real sequence and their convergence. Theorem on limits of sequence, Bounded and monotonic sequences, Cauchy's sequence, Cauchy general principle of convergence, subsequence, subsequence limit. Infinite series: D-Alembert ratio test, Raabe's test, convergence and divergence of infinite series. Comparison Tests of positive terms infinite series
March 2024	Infinite series: D-Alembert's ratio test, Raabe's test, logarithmic test, de Morgan and Bertrand's test, Cauchy's Nth root test, Gauss test. Cauchy's Integral test, Cauchy's Condensation test.

April  
2024

Alternating series, Leibnitz test, absolute  
and Conditional convergence. Arbitrary series  
Abel's lemma, Abel's test - Dirichlet's theorem,  
Riemann's Rearrangement theorem, Pringheim's  
theorem

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