B.A./B.Sc. FIRST YEAR MATHEMATICS SYLLABUS PAPER - I
(SEMESTER –I)
CBCS(NEW)
MAT 109 - DIFFERENTIAL EQUATIONS
(For the Batches admitted from 2016-17)

60HRS

UNIT-I: Differential Equations of first order and first degree: (12HRS)

Linear differential equations; Differential Equations reducible to linear form; Exact differential equations; Integrating factors; Change of variables; Simultaneous differential equations; Orthogonal Trajectories.

UNIT- II: Differential Equations of first order but not of the first degree:(12HRS)

Equations solvable for p; Equations solvable for y; Equations solvable for x; Equations that do
not contain x (or y); Equations of the first degree in x and y – Clairaut's equations.

UNIT –III: Higher Order linear Differential Equations –I(14HRS)

Solution of Homogeneous linear differential equations of order n with constant coefficients, Solution of the non - homogeneous linear differential equations with constant coefficients by means of Polynomial operators.

UNIT –IV: Higher Order linear Differential Equations-II (12HRS)
Method of Variation of parameters; Linear differential equations with non- constant coefficients;
The Cauchy- Euler equation.

UNIT –V: System of linear Differential Equations.(10HRS)
Solution of a system of linear equations with constant coefficients, An equivalent triangular system .Degenerate case: p_1 (D) P_4 (D) - P_2 (D) $P_3(D)$ =0.

Additional Module:
Method of undetermined coefficients, Legendre equations.

Reference Books:
1.Differential Equations and Their Applications by Zafar Ahsan, published by Prentice –Hall of India Pvt. Ltd. New Delhi- Second edition.
2.A text book of Mathematics for B.A/B.SC Vol 1 by N.Krishnamurthy and others , published by S.chand& company , NewDelhi.
3.Ordinary and partial Differential equations Raisinghania , Published by S.chand& company , NewDelhi.
4. Differential Equations with applications and programs- S. BalachandraRao&HR Andhra –University press.