B.Sc. Other than Mathematics (Minor Course)
SEMESTER-III
Course Code: MATH-MI-T-03
Course title: Calculus and Differential equations
Session: 2025-2026

Semester – III			
Name of the teacher	**Unit**	**Subject**	**Classes**
Md. MeezanurRahaman	**1**	● Statement of Rolle's Theorem and its geometrical interpretation. Mean value theorems of Lagrange and Cauchy. Statements of Taylor's and Maclaurin's theorems with Lagrange's and Cauchy's forms of remainders. Taylor's and Maclaurin's infinite series of functions like e^x, sinx, cosx, $(1+x)^n$, log(1+x) with restrictions wherever necessary. ● Application of the principle of maxima and minima for a function of a single variable.	10
Dr. Sarifuddin	**1**	● Real-valued functions defined on an interval, limit and Continuity of a function (using $\varepsilon - \delta$). Algebra of limits. Differentiability of a function. ● Successive derivative: Leibnitz's theorem and its application to problems of type $e^{(ax+b)}$sinx, $e^{(ax+b)}$cosx, $(ax+b)^n sinx$,$(ax+b)^n cosx$.	10
Babulal Tudu	**3**	● Second order differential equation: (i) Method of variation of parameters, (ii) Method of undetermined coefficients. ● Linear homogeneous equations with constant coefficients, method of variation of parameters, simultaneous differential equations.	12
Ariful Islam	**2**	● Reduction formulae, derivations and illustrations of reduction formulae of the type $\int sinnxdx$,$\int cosnxdx$,$\int tannxdx$,$\int secnxdx$,$\int(\log x)^n dx$,$\int sinn\, xcosmxdx$.	5
Gaurab Mitra	**3**	● First order equations: (i) Exact equations and those reducible to such equations. (ii) Euler's and Bernoulli's equations (Linear). (iii) Clairaut's Equations: General and Singular solutions.	8
Bilkis Khatun	**1**	● Partial derivatives. Euler's theorem on homogeneous function of two and three variables. ● Curvature, rectilinear asymptotes. ● Indeterminate Forms: L'Hospital's Rule (Statement and Problems only).	5