Indian Institute of Engineering Science and Technology, Shibpur
Department of Mathematics

B. Arch. First Semester Course

Subject : Mathematics-IA (MA-1102)

Weekly contact: 2-1-0 (L-T-P) Full Marks : 100 Credit: 3

Sl. No.	Module name and topics	No. of classes
1.	**Functions of a Single Real Variable:** n-th order derivative, Leibnitz's theorem for successive differentiation, Taylor's theorem with Lagrange's and Cauchy's forms of remainders, Taylor's and Maclaurin's series, expansion of functions, curvature, asymptotes, curve tracing.	15
2.	**Functions of Several Real Variables:** Partial derivatives, chain rule, differential and small error, Euler's theorem for homogeneous functions, Taylor's theorem (statement only), expansion of functions of two real variables, maxima and minima, Lagrange's method of multipliers.	15
3.	**Infinite Series:** Concept of convergence, Geometrics series and p series, Comparison test, D'Alembert's Ratio Test, Cauchy's Root Test, Raabe's Test, Gauss test, Power series, Radius of convergence.	6
4.	**Multiple Integral:** Double integral, change of order of integration, Jacobian, change of variables, applications.	6
	First half: Sl. No. 1, 3 Second half: Sl. No. 2, 4	42

Suggested Reading: (1) Advanced Engineering Mathematics – E. Kryszig, (2) Engineering Mathematics – B. S. Grewal, (3) Introductory Course in Differential Equations – Daniel A. Murray, (4) Differential Calculus – B. C. Das & B. N. Mukherjee, (5) Integral Calculus – B. C. Das & B. N. Mukherjee, (6) Advanced Calculus – D. V. Widder.