

Mathematics-I**MA 101 S1****Scheme**

L	T	P	Credit
3	1	0	04

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- **DIFFERENTIAL CALCULUS** (10 Hours)
Differentiation of Hyperbolic and Inverse Hyperbolic functions. Successive Differentiation, standard forms, Leibnitz's theorem and applications, Power series, Expansion of functions, Taylor's and Maclaurin's series. Curvature, Radius of curvature for Cartesian curve with application.
 - **PARTIAL DIFFERENTIATION** (10 Hours)
Partial differentiation, Euler's theorem for homogeneous function, Modified Euler's theorem, Taylor's and Maclaurin's series for two variables. Tangent plane and Normal line, Error and Approximation, Jacobians with properties, Extreme values of function of two variables, Lagrange's methods of undetermined multipliers
 - **CURVE TRACING** (05 Hours)
Cartesian, polar and parametric form of standard curves.
 - **BETA AND GAMMA FUNCTION** (04 Hours)
Beta and Gamma function with their properties and duplications formula without proof.
 - **DOUBEL INTEGRALS** (08 Hours)
Reorientation of concepts of integrals and Double integrals, evaluation techniques, change of order of Integration, change of variable, Application of double integrals for evaluation of area and volume.
 - **TRIPLE INTEGRALS** (05 Hours)
Triple integrals, evaluation techniques, Application of triple integrals for evaluation of volume.

(Total Lecture Hours: 42)

Books Recommended:

1. James Stewart De Calculas, Thomson Asia, Singapore, 2003.
2. O'Neil Peter., "Advanced Engg. Mathematics", Thompson, Singapore, Ind. Ed. 2002.
3. Kreyszing E., "Advanced Engineering Mathematics", John Wiley & Sons, Singapore, Int. Student Ed. 2015.
4. Wiley C. R., "Advanced Engineering Mathematics", McGraw Hill Inc., New York Ed. 1993.
5. F. B. Hilderband, "Methods of Applied mathematics", PHI, New Delhi, 1968

Reference Books:

1. Ramana D. V., "Higher Engg. Mathematics", The MaGraw-Hill Inc., New Delhi, 2007.
2. Srimanta Pal, Subodh C. Bhunia, " Engineering Mathematics", Oxford University Press, New Delhi, 2015.
3. Bali and Iyengar. Engg. Mathematics, Laxmi Publications, New Delhi, 2004.