

INVERTIS UNIVERSITY BAREILLY

Established by Govt. of U.P. u/s 2F of UGC Act, 1956 vide U.P. Act 22 of 2010

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| BAS301 | MATHEMATICS III | 3L:1T:0P | 4 credits |
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MODULE-I

Function of Complex variable: Analytic function, C-R equations, Cauchy's integral theorem, Cauchy's integral formula for derivatives of analytic function, Taylor's and Laurent's series, singularities, Residue theorem, Evaluation of real integrals.

MODULE-II

Statistical Techniques-I: Moments, Moment generating functions, Skewness, Kurtosis, Curve fitting, Method of least squares, Fitting of straight lines, Polynomials, Exponential curves etc., Correlation, Linear, non-linear and multiple regression analysis, Probability theory.

Statistical Techniques-II: Binomial, Poisson and Normal distributions, Sampling theory (small and large), Tests of significations: Chi-square test, t-test, Analysis of variance (one way), Application to engineering, medicine, agriculture etc.

Time series and forecasting (moving and semi-averages), Statistical quality control methods, Control charts, R, p, np, and c charts.

MODULE-III

Numerical Techniques-I: Zeroes of transcendental and polynomial equation using Bisection method, Regula-falsi method and Newton-Raphson method, Rate of convergence of above methods.

Interpolation: Finite differences, difference tables, Newton's forward and backward interpolation, Lagrange's and Newton's divided difference formula for unequal intervals.

Numerical Techniques-II: Solution of system of linear equations, Gauss-Seidal method, Crout method. Numerical differentiation, Numerical integration, Trapezoidal, Simpson's one third and three-eighth rules, Solution of ordinary differential (first order, second order and simultaneous) equations by Euler's, Picard's and fourth-order Runge-Kutta methods.

Text Books:

1. Jain, Iyenger & Jain, Numerical Methods for Scientific and Engineering Computation, New Age International, New Delhi, 2003.
2. Chandrika Prasad, Advanced Mathematics for Engineers, Prasad Mudralaya, 1996.
3. E. Kreysig, Advanced Engineering Mathematics, John Wiley & Sons, 2005.
4. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 2005.
5. Devi Prasad, An introduction to Numerical Analysis, Narosa Publication house, Delhi 2006.
6. R.K. Jain & S.R.K. Iyenger, Advance Engineering Mathematics, Narosa Publication House, 2002.

Reference Books:

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Effective from session 2020-21

Registrar
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Faculty of Engineering & Technology

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