

ENG 301 Engineering Analysis III

Analytic Geometry; straight line in space, direction angles, direction cosines & numbers, distances btw two points, direction of a line, angle btw two points, distance btw a point and a line, Equation of a straight line. Vector Analysis; unit vector, laws of vectors, vectors in space, directions of cosines, the DOT product, scalar product of two vectors, vector product of two vectors, angle btw two vectors, the cross product, the triple product. Determinants; determinants of the third order, evaluation of a third-order determinant, simultaneous equations in three unknowns, consistency & linear dependence, Homogeneous equation, properties of determinants. Matrices; order & types of matrices, addition, subtraction & multiplication, identity matrix, inverse of a square matrix, Transpose of a matrix, solutions of sets of linear equations, symmetric matrix, determinants of a square matrix,. Gaussian elimination method, Eigen values and Eigen vectors. Differentiation and its Application; standard differential coefficients, function of a function, Logarithmic differentiation, implicit functions, parametric functions, Equation of a straight line, tangents & normals, centre of curvature, Inverse trigonometric functions, differential coefficient of inverse hyperbolic functions, maximum & minimum values(turning points), partial differentiation. First order ordinary differential Equations; solutions by direct integration, separation of variables, Homogeneous equations, Exact & inexact equations, integrating factors, linear equations, variation of parameters, Bernoulli Equation; Higher order ordinary differential Equations- Homogeneous linear differential Equations, Second order differential equations, Homogeneous second order differential equation, Non- homogeneous linear differential equations, D-operator method of solving differential equations, inverse differential operator.