MA 210 MATHEMATICS LABORATORY (0-0-4 : 2)

Rank of a matrix, consistent linear system of equations, row reduced echelon matrices, inverse of a matrix, Gauss-Jordan method of finding an inverse of a matrix.

Eigenvalues and eigenvectors, diagonalisation of matrices, Caley-Hamilton theorem.

Hermitian, Unitary and Normal Matrices, bilinear and quadratic forms.

Roots of a polynomial; numerical solution of a system of algebraic equations: Newton-Raphson and iterative methods; interpolation: Lagrange interpolation formula, interpolation formula by use of differences.

Numerical differentiation; numerical integration: trapezoidal rule and Simson's formula; error estimates in numerical differentiation and integration. Numerical solution to ODEs & PDEs.

Computer graphics: plotting of line, triangle and circle; plotting of surface, cylinder, cube and sphere; projections; rotations.

References:

1. Quarteroni, Alfio, Saler'Faust°, Gervasio and Paola, Scientific Computing With MATLAB And Octave, Springer, 2010.