Course Outcomes	Aligned Programme Outcomes (PO)
On completing this course students will be able to 1. compute eigenvalues and eigenvectors of the given matrix. 2. transform given quadratic form into canonical form. 3. discuss the convergence of infinite series by applying various test. 4. compute partial derivatives of function of several variables 5. write Taylor's series for functions with two variables. 6. discuss maxima and minima of functions of two variables 7. evaluate multiple integral and its applications in finding area, volume.	

MAIR11 MATHEMATICS- I

Characteristic equation of a matrix –Eigen values and Eigen vectors – Properties of Eigen values – Diagonalization of matrix – Cayley-Hamilton Theorem (without proof) verification – Finding Inverse and Power of a matrix using it – Quadratic form – Definite and indefinite forms – Orthogonal reduction of quadratic form to canonical form.

Introduction to sequences, Infinite series-Convergence Tests for positive term series – Comparison, integral test, Root, Ratio test, Raabe's tests, logarithmic test - Alternating series – Leibnitz's rule – Absolute and Conditional Convergence. Riemann rearrangement theorem (without proof).

Functions of several variables – Partial derivatives and Transformation of variables – Jacobian and its Properties- Taylor series-Maxima and Minima of function of two variables.

Double integral – Changing the order of Integration – Change of variables from Cartesian to Polar Coordinates – Area using double integral in Cartesian and Polar Coordinates – Triple integral – Change of Variables from Cartesian to Spherical and Cylindrical Coordinates – Volume using double and triple integrals.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery