Mathematics (FYUGP 2024-25)

SEM I:

Minor Course

Paper Description: Classical Algebra and Matrix Theory

Paper Code: MATHMIN101

Course outcomes: After completion of the course

CO1: Students will be able to know about Complex numbers and their polar presentation. Also, they will get to know De-Moivre's Theorem, Logarithmic, Exponential, trigonometric and hyperbolic functions of complex numbers.

CO2: Students will be acquainted with some new areas of equation. They will learn to solve beyond quadratic equations.

CO3: Students will be able to analyse and interpret the relations among arithmetic mean, geometric mean and harmonic mean including Cauchy-Schwarz theorem and apply those concepts in various fields in future.

CO4: Students will learn row reduced form and row reduced echelon form of a matrix which will help to find the rank of a matrix, rank of a null space, row space and column space of a matrix. Congruence will help to find the normal form of a square matrix and find the signature and index of a matrix.

CO5: Students will be able to learn how to find eigen values and eigen vectors of a matrix which will help to find whether the matrix is diagonalized or not. Further this study will be useful for study of vibration, chemical reaction and geometry.

SEM II:

Minor Course

Paper Description: Calculus and Geometry

Paper Code: MATHMIN202

Course outcomes: After completion of the course

CO1: Students will be able to learn the applications of integral calculus such as reduction formulae, to find arc length of a curve, area enclosed by a curve, area between two curves.

CO2: Students will be able to find successive derivative of a function using Leibnitz's rule, to find the limit of functions using L-Hospital's rule. Also, they will learn the application of differential calculus such as finding asymptotes, envelopes, concavity, convexity, inflection points etc.

CO3: Students will understand the concept of two dimension in Cartesian and Polar co-ordinate system and transient behaviour of some known curves such as straight lines, conics etc.

CO4: Students will understand the concept of three dimension in Cartesian and Polar co-ordinate system and transient behaviour of some known surfaces such as spheres, cylindrical surfaces, cones, paraboloids, hyperboloids etc.