**Syllabus of Course Scheme**
**(Academic Session 2019-2020)**

# B.Sc. Mathematics Semester Scheme

## Semester-(V)

## Exam-2020

**UNIVERSITY OF KOTA**
**MBS Marg, Swami Vivekanand Nagar,**
**Kota - 324 005, Rajasthan, India**
**Website: uok.ac.in**

# Semester-V

## Paper-351

### Name linear Algebra and Complex analysis

**Unit I (linear Algebra )**

Definition and Examples of a Vector space , Subspace Linear combination and linear space, Linear dependence and Independence of vectors, direct sum of sub-spaces .

**Unit II (linear Algebra )**

Basis and dimensions of finitely generated spaces. Quotient Space, Linear transformation{LT), Rank and nullity of LT.

**Unit III(linear Algebra )**

Characteristic values and characteristic Vectors of a matrix.

**Unit IV (Complex Analysis)**

Complex Numbers as Ordered pairs . Geometric representation of Complex . Limit, continuity and differentiability of complex valued function. Analytic functions. Cauchy-Riemann equations , Harmonic functions . Determination of conjugate function.

**Unit V (Complex Analysis)**

Mapping or transformations – Isogonal and conformal mappings , necessary and sufficient conditions for a conformal mapping . Mobious Transformations , Fixed points ,Cross Ratio, Inverse points

# Semester-V

## Paper 352

### Name Mathematical Statistics

**Unit I**

Central Moments , First Four moments in terms of raw moments and visa-versa. Karl Pearson's Beta and Gamma Coefficients , Measures of Skewness and kurtosis. Random Experiments , Sample space , Events , types of Events , Probability . Conditional probability of an event.

**Unit II**

Independent Events Theorems of compound and Total probability, Baye's and its simple applications. Random Variables(RV) – discrete and continuous RV. Probability distribution of discrete RV. Probability density function of a continuous RV.

## Unit III

Distribution function, Mathematical Expectation of RV and of a function of RV . Moments and Moments generating functions, Cumulants generating function and cumulants . Characteristic function .

## Unit IV

Discrete Probability distribution : Bernouli, Binomial, Poisson.

## Unit V

Continuous Probability distribution – Normal distribution .