Army Institute of Technology
Department of Computer Engineering
M. Tech Data Science

Syllabus for Admission Test (Non-GATE Candidates)

Python Basics: Taking input in Python, Output using print function, Variables, Data Types, Loops and Control Statements, Functions. Operations on Numpy Arrays, Slicing, Indexing, Manipulating and Cleaning Pandas Dataframe, Pandas and CSV, Read CSV, Export Pandas dataframe to a CSV file, Working with excel files using Pandas, Data Visualization using Matplotlib, Style Plots using Matplotlib, Line chart in Matplotlib, Bar Plot in Matplotlib, Box Plot in Python using Matplotlib, Scatter Plot in Matplotlib, Heatmap in Matplotlib, Measures of Central Tendency, Statistics with Python, Measuring Variance, Normal Distribution, Binomial Distribution, Poisson Discrete Distribution, Correlation in Python.

Data Analysis and Probability Theory: Data Representation, Average, Spread, Experiments, Outcomes, Events, Probability, Permutations and Combinations, Random Variables, Probability Distributions, Mean and Variance of a Distribution, Binomial, Poisson, and Normal Distributions, Bayes' Theorem.

Measures of Central Tendency: Mean, Median, Mode.

Measures of Dispersion: Range, Variance, Mean Deviation, Standard Deviation.

**Coefficient of variation**: Moments, Skewness, Kurtosis.

Measure of Relationship: Covariance, Pearson Correlation, Karl Pearson's Coefficient of Correlation.

Measures of Position: Percentile, Quartiles.

Linear Algebra and Calculus: Linear Algebra: Matrix and vector algebra, systems of linear equations using matrices, linear independence, Matrix factorization concept/LU decomposition, Eigen values and eigenvectors.

Regression Model: Introduction, types of regression, Simple regression- Types, Making predictions, Cost function, Multivariable regression.

P G Coordinator

PUNE
411015

Dept. of
Comp. Engg.
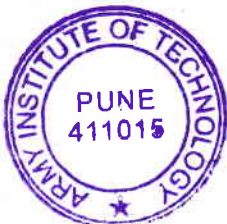
Principal
Army Institute of Technology