MATHEMATICS (MATH)

MATH 527 Linear Algebra for Data Science (2)
An application-focused approach to linear algebra used in data science. Topics include matrices, Gaussian elimination, vector spaces, inner products, orthogonality, least squares, eigenvalues/vectors, matrix factorizations, singular value decomposition and principal component analysis, quadratic forms, data/image processing, and other topics pertinent to data analysis.

MATH 548 Statistical Methods for Data Science (3)
This course provides a comprehensive, application-focused overview of essential statistical methods for data science. Topics include data collection techniques, descriptive statistics, and exploratory data analysis. Foundational concepts such as sampling distributions and the Central Limit Theorem set the groundwork for estimation, confidence intervals, and hypothesis testing. Students will explore techniques in ANOVA and categorical data analysis, as well as nonparametric techniques and permutation tests. Advanced methods include the bootstrap, linear and logistic regression, generalized linear models, and linear discriminant analysis, equipping students with a versatile toolkit for real-world data analysis and decision-making in data-driven contexts.