Data Science (DSC) - Courses

Courses

DSC 210 Cr.3

Foundations of Data Science

This course is an introduction to the data science workflow covering project formulation, data pre-processing, algorithm application, and result interpretation. Students learn to select and apply appropriate data science techniques, differentiate between supervised and unsupervised problems, and process incomplete datasets for analysis. The course emphasizes comparing model performance and communicating methods and results effectively to both technical and non-technical audiences. Prerequisite: STAT 145 or STAT 245; MTH 160 or MTH 175 or MTH 207. Offered Annually.

DSC 420 Cr.3

Supervised Learning

This course is an introduction to machine and statistical learning techniques for making predictions using large and complex data. Supervised learning methods are discussed such as linear and logistic regression, linear discriminant analysis, linear model selection and regularization, decision trees, support vector machines, and artificial neural networks. The uncertainty of the predictions are analyzed using cross-validation and bootstrapping. Prerequisite: grade of "C" or better in CS 120, MTH 308, and STAT 305. Offered Annually.

DSC 430 Cr.3

Unsupervised Learning

This course provides an in-depth introduction to unsupervised learning techniques for analyzing and interpreting unlabeled data. Students explore key concepts such as clustering, dimensionality reduction, and anomaly detection, using both traditional and modern approaches. The curriculum emphasizes practical applications across various domains such as market basket analysis, customer segmentation, music genre classification, and fraud detection. Optional topics in graph-based learning and manifold learning allow further exploration of advanced methods used in social network analysis and high-dimensional data visualization. Prerequisite: CS 120; MTH 308; STAT 305. Offered Spring.