DATA SCIENCE (DS) Courses

DS 1001. Data Science and AI for All. (1-0) 1 Credit Hour.
Prerequisite: Satisfactory performance on placement examination.
The course is designed for students from all academic backgrounds to
develop interests in data science and artificial intelligence. Introduction
to the concept of analyzing data culled from a variety of sources, and
understanding the methods of aggregating data, forming coherent
queries, and building machine learning models to derive insights from
data. Topics may include Python programming using Jupyter Notebook,
R programming, text analysis, database, data analytics, and data
visualization. Course Fee: LRDS $12.50.

DS 3023. Statistical Analysis for Data Science. (3-0) 3 Credit Hours.
Prerequisite: MAT 1073 or the equivalent. Introduction to the scientific
method; principles of sampling and experimentation; scales of
measurement; exploratory data analysis; basic probability; models for
discrete and continuous data; simple simulations and inferences based
on resampling; fundamentals of hypothesis testing and confidence
intervals; analysis of variance and linear regression model; tensors and
matrices. The course will emphasize data analysis and interpretation
and effective communication of results through reports or presentations
within data science contexts. Course Fee: LRDS $37.50.

DS 4003. Introduction to Data Science. (3-0) 3 Credit Hours.
Prerequisite: MAT 1073 or the equivalent. An introduction to foundational
data science knowledge and life cycle. Focus areas on data visualization,
data curation, ethics, and tools available for analysis will be covered.
Course Fees: LRDS $37.50; DL01 $75.

DS 4013. Programming for Data Science. (3-0) 3 Credit Hours.
Prerequisite: MAT 1073 or the equivalent. An introduction to data-driven
programming emphasizing problem solving and critical thinking. Topics
will focus on foundational computer programming concepts and skills.
Course Fees: LRDS $37.50; DL01 $75.

DS 4023. Data Organization and Visualization. (3-0) 3 Credit Hours.
Prerequisites: DS 3023, DS 4003, and DS 4013 or the equivalents.
This course focuses on programming concepts, file input/output, and
recursion that are involved in integrating, loading, processing, and
transforming data from external sources for exploratory data analysis
and visualization using data science software packages and APIs. Course
Fees: LRDS $37.50; DL01 $75.

DS 4033. Data Mining and Machine Learning. (3-0) 3 Credit Hours.
Prerequisites: Completion of or concurrent enrollment in DS 4023. This
course utilizes fundamental data science concepts to introduce in-depth
analysis, data mining, machine learning, and artificial intelligence. Topics
may include clustering, classification, evaluation metrics, supervised
and unsupervised learning, search algorithms, intelligent agents, and AI
applications in select areas. Course fee: DL01 $75.